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Connecticut Dept of Environmental Protection, Hartford

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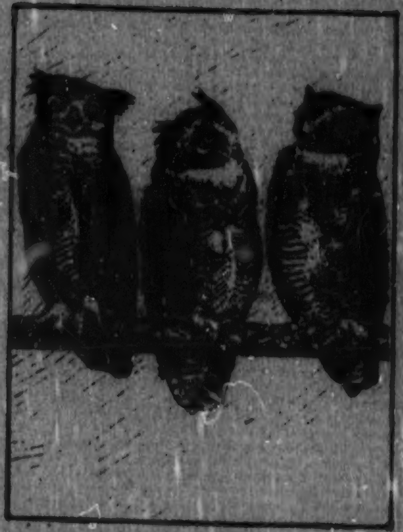
ECONOMIC LAW ENFORCEMENT

VOLUME V

ENSURING PROPER OPERATION AND MAINTENANCE: THE ENVIRONMENT'S NEXT REGULATORY PROBLEM



The Judges, (detail American woodcut, 19th Century).

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CONNECTICUT ENFORCEMENT PROJECT
DEPARTMENT OF ENVIRONMENTAL PROTECTION
HARTFORD, CONNECTICUT 06115

SEPTEMBER, 1975

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Volume 5 discusses economic means by which the environmental protection department of the State of Connecticut can obtain proper operation and maintenance of industrial air pollution control equipment. Policing is difficult because violations may be difficult to prove and remedial action difficult to fashion.

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To Whom It May Concern:

The accompanying four volumes are part of a six volume set entitled "Economic Law Enforcement" which has been prepared by the Connecticut Department of Environmental Protection. They describe a promising approach to the enforcement of environmental laws now being implemented and tested in Connecticut. Printing and editing problems have delayed Volumes III (Water Pollution) and VI (Legal Issues) and they will be forwarded as soon as they are completed. Fortunately each volume is a complete unit in itself.

The new approach, through the use of administratively imposed civil penalties, uses economic incentives that can be adjusted to meet different levels of resistance or cooperation. At most, the penalty to a violator would not exceed the cost of meeting his environmental requirements. It thus removes the economic advantage of deferring clean up activities without being unduly harsh.

Similar economic enforcement tools are either being considered or employed by Congress and several other states. While more experience is needed to prove their value, the possibility of increasing compliance with environmental laws at reduced cost and without the usual court delay deserves serious attention.

Very truly yours,

John A.S. McGlennon
Regional Administrator

The Judges (detail)
John Andrew and Son (after W. H. Drake)
American, 19th Century
Wood engraving
Courtesy Museum of Fine Arts, Boston, Ma.

EPA-901/9-76-003e

ECONOMIC LAW ENFORCEMENT

VOLUME V

ENSURING PROPER OPERATION AND MAINTENANCE: THE ENVIRONMENT'S NEXT REGULATORY PROBLEM

Final Report Submitted Under Contract #M00103910

by: The Connecticut Enforcement Project
Department of Environmental Protection
Hartford, Connecticut 06115

to: The U.S. Environmental Protection Agency
Region I
Boston, Massachusetts 02203

September 1975

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VOLUME V

ECONOMIC ADMINISTRATIVE REMEDIES TO ENSURE PROPER OPERATION AND MAINTENANCE OF AIR POLLUTION CONTROL EQUIPMENT

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ECONOMIC ADMINISTRATIVE REMEDIES TO ENSURE PROPER OPERATION AND MAINTENANCE OF AIR POLLUTION CONTROL EQUIPMENT

INTRODUCTION

As increasing numbers of industrial sources of air pollution complete the installation of control equipment, the attention of regulatory agencies must shift to ensuring proper operation and maintenance of this equipment. Policing O&M is considerably more difficult than mandating initial investment in control equipment, however, because violations are technically more difficult to detect, continuous violations more difficult to prove, and remedial action more difficult to fashion. Unless regulatory agencies develop enforcement tools to solve these problems, improper operation and maintenance could easily frustrate public expectations of clean air arising from industrial investment in control equipment.

The Connecticut Enforcement Project (CEP) has designed new administrative enforcement tools to ensure proper operation and maintenance of air pollution control equipment. These tools -- economic remedies the Department can use administratively -- are based on the savings to a source of not operating or maintaining installed air pollution control equipment. By eliminating the savings from improper O&M, these economic remedies provide an economic incentive which fully counterbalances the existing disincentives to operate control equipment. Assessments are just large enough to encourage proper O&M, no larger: by tying assessments to the cost of compliance, these economic tools provide administrative remedies that are equitable as well as effective, and contain built-in objective standards to restrain administrative discretion.

This Volume describes a program for O&M enforcement using economic assessments, designed for the Connecticut Department of Environmental Protection by the CEP. Part I describes how this enforcement program would work. It outlines (1) the problems of enforcing full and proper O&M and (2) the tools developed to address them. Part II explains the economics on which the program is based. This explanation includes a description of how the costs of compliance are estimated and how assessments are calculated with this information in individual cases. Part III contains an annotated set of regulations that could be used as the legal basis for such an O&M enforcement program.

The approach to enforcing O&M requirements outlined in this Volume is described in less detail than the enforcement programs described in the other Volumes of this Report. The general approach and the proposed regulations are complete, but further refining, testing, evaluating, and re-refining of specific elements remains to be done. Unlike the other portions of CEP's work which deal almost exclusively with the fashioning of tools to be used to enforce existing programs, here a program to deal with operating and maintenance - what standards should be created, how compliance with these standards is to be detected and proved, etc. - had to be built before enforcement tools could be developed.

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PART I

A PROGRAM TO ENSURE PROPER OPERATION AND MAINTENANCE

PART I

A PROGRAM TO ENSURE PROPER OPERATION AND MAINTENANCE

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CHAPTER I

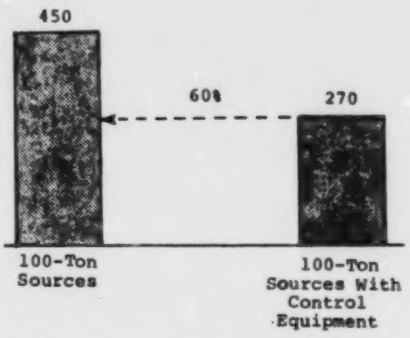
O&M ENFORCEMENT PROBLEMS

The focus of environmental law enforcement is shifting to ensuring proper operation and maintenance of installed control equipment. This is not going to be an easy task.

THE IMPORTANCE OF O&M ENFORCEMENT

Over 1170 industrial sources of air pollution in Connecticut have installed control equipment, including nearly two-thirds of the state's major sources.

Major Sources with Installed Control Equipment



Source: Registration data from Department files.

If Connecticut (and the other states) are to achieve and maintain expected improvement in air quality from this and other equipment to be installed in the future, the equipment must be operated and maintained properly. However, the economic incentive to the owner of an air pollution source not to operate its control equipment is strong. This conflict between a declared public goal and private interests is the source of Connecticut's O&M enforcement problem, and of the need for environmental enforcement generally. If the Department of Environmental Protection is to solve the problem, it needs an enforcement program which is effective and fair, and one that can be implemented with available resources.

Improper O&M Causes Air Pollution

Improper operation and maintenance drastically reduces the effectiveness of control equipment*. The ability of baghouses and scrubbers, for example -- the two most widely used types of control equipment in Connecticut -- to clean pollutants from air flows can drop close to zero if the blower speed is reduced 50 percent and a bypass opened.

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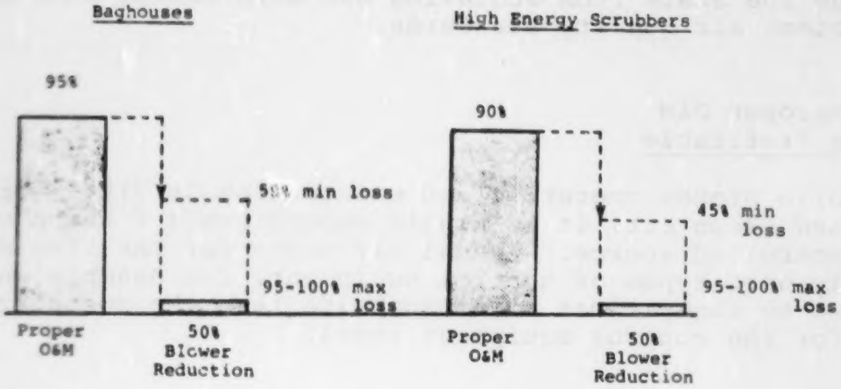
*See generally, EPA, Control Techniques for Particulate Air Pollutants, AP-51 (Dec. 1972); DHEW, Control Techniques for Carbon Monoxide Emissions from Stationary Sources, AP-65 (March 1970); DHEW, Control Techniques for Nitrogen Oxide Emissions from Stationary Sources, AP-67 (March 1970); DHEW, Control Techniques for Hydrocarbon Emissions from Stationary Sources, AP-68 (March 1970); Control Techniques for Sulfur Oxide Pollutants, AP-52 (Jan. 1969).

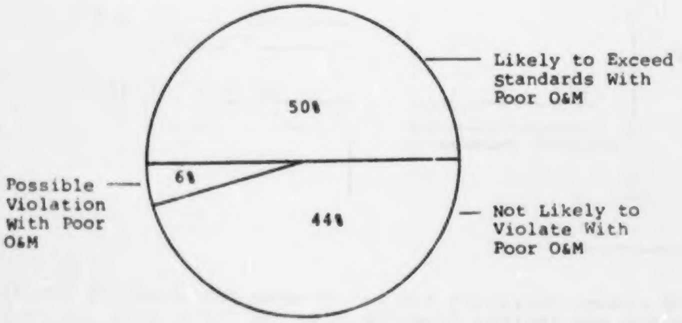
Loss of Collection Efficiency
With Poor O&M



Source: Engineering Estimates, DEP Air Compliance Unit

Moreover, the control equipment on half of the controlled sources in Connecticut must operate constantly at high efficiency in order for the source to continue to meet emissions standards. The Department estimates, based on source registration data, that the equipment on these sources has very little unused gas cleaning capacity or "cushion" which might otherwise keep emissions from poorly operated equipment within the standards.

Improper O&M Causes Emissions Violations



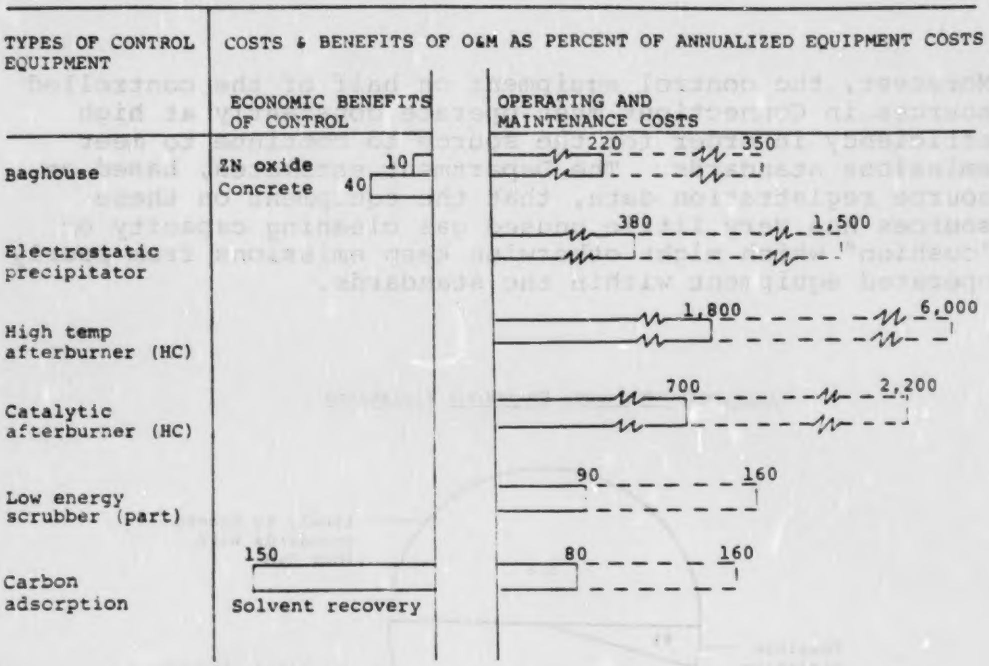
Source: DEP Air Compliance Files, Enforcement Unit,
April, 1975

Thus, improper O&M seriously impairs the ability of many sources to meet emissions standards, and could endanger or preclude the State from achieving and maintaining some of its ambient air quality standards.

Improper O&M Is Profitable

While proper operation and maintenance is vital for continued clean air, it is highly unprofitable for the owner of a controlled source. Annual O&M costs for the five most commonly used types of control equipment, for example, are from two to sixty times more expensive than the annualized costs for the control equipment itself.

O&M Costs More than Equipment



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* Estimates of annual operating and maintenance costs and of annualized equipment costs are derived from EPA, Control Techniques for Particulate Air Pollutants, AP-51, pp. 166-176 (Dec. 1972), updated to 1975 dollars.

In addition, these savings come from easily made cutbacks in operations and/or maintenance.

Areas for O&M Savings

Type of Control Equipment	O&M Areas for Money Saving Cutbacks
Baghouse (Fabric Filter)	. Electricity for blower . Replacement of bags . Replacement of durable components
Electrostatic Precipitator	. Electricity for charge across plates and blower . Maintenance and cleaning of plates . Replacement of durable components
Afterburner	. Electricity for blower . Fuel . Replacement of durable components
Catalytic Afterburner	. Electricity for blower . Fuel . Replacement of durable components . Replacement and servicing of catalytic bed
Low Energy Scrubber	. Electricity for blower . Chemicals . Replace and adjustment of spray heads . Replacement of durable components . Replacement and servicing of packing
Venturi Scrubber	. Electricity for blower . Replacement of durable components

Source: Interviews with DEP Air Compliance Staff, Enforcement Unit.

Thus, the economic incentive not to operate and maintain control equipment properly is much stronger than the incentive not to install the equipment in the first place. If effective enforcement tools were necessary to get the equipment in, they will be even more critical to ensure full and proper O&M.

O&M ENFORCEMENT PROBLEMS

To deal effectively with improper operation and maintenance, the Department must be able to eliminate the economic benefits from improper O&M. In effect, the Department must be able to make proper O&M a worthwhile investment for a source owner. To accomplish this goal, the Department needs to establish useable O&M standards, to detect improper O&M when it occurs, to prove how long the improper O&M continued, and to fashion remedies which encourage better performance by the source owner in the future. Achieving these four objectives -- standard-setting, detection, proof, adequate remedy -- is more difficult for O&M enforcement than for other areas of regulation. If enforcement is to be effective, new tools are needed to deal with these four problems.

Standard-Setting

For a source with control equipment to continue to meet emissions standards, the control equipment must be properly operated and maintained. Thus, emissions standards could serve as a standard of O&M performance. Once control equipment is installed, however, emissions standards are more difficult to enforce effectively. Emissions mass standards require expensive testing to determine compliance on a regular basis. Emission opacity standards are easy and inexpensive to apply; but they affect only a limited number of Connecticut's controlled sources.

Mass standards define emission levels in terms of the weight or mass of pollutants emitted from a process using a given quantity of material. For example, the particulate emission standard in Connecticut is 17.19 pounds of particulate per hour for a general process source (e.g. a brass smelting plant) which uses 25,000 pounds of input materials per hour.* To see if a source is in compliance or not, the Department compares the standard to its calculation of the weight of pollutants being emitted. The Department makes the calculation by taking the weight or mass of materials introduced into the emitting process (pounds per hour of raw materials used in the process) and plugging this number into an equation which relate these manufacturing inputs to emissions.* Continuing the example, EPA's emission factors for brass smelting plants project that an uncontrolled plant (with an electric induction furnace) which uses 25,000 pounds per hour of raw materials (copper, silicone, zinc, aluminum) emits from 25 to 125 pounds of particulates per hour, depending on the percent of zinc used and the operating temperature of the furnace.** The emissions exceed the standard of 17.19 pounds per hour and need to be reduced, usually by control equipment.

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*DEP, Regulations for the Abatement of Air Pollution, Section 19-508-18(e)(1).

Once the owner of a source installs control equipment, however, these emission projections no longer hold. Since the control equipment traps a portion of the particulates which otherwise would be discharged, the emission projections for uncontrolled sources overstate the emissions from controlled sources. To continue the brass smelter example, suppose the owner installs a baghouse with a design efficiency of 98 percent for a 25,000 pounds per hour plant. When the baghouse operates at design efficiency, the emissions should contain only 0.5 to 2.5 pounds per hour of particulates. The emission equation should be changed to reflect the effect of the baghouse.

Adjusting emission equations to take account of control equipment is tricky because it requires an assumption of how effectively the equipment traps emissions. But effectiveness can vary widely depending on whether or how the equipment is used. Baghouses are generally designed to be 98 percent effective, for example, for emissions typical of brass smelters.*** If the owner turns off the baghouse and opens bypasses, or raises the temperature in the furnace and inadvertently burns out the filtering bags in the baghouse, effectiveness drops to nearly zero. Thus, an assumption of control equipment effectiveness requires a further assumption about operation and maintenance practices.

The obvious difficulty with the Department making O&M assumptions in order to revise emission equations is that O&M practices are the very behavior it seeks to observe and measure. Because of this problem, emissions standards are difficult to enforce against controlled sources using the mass standard approach.

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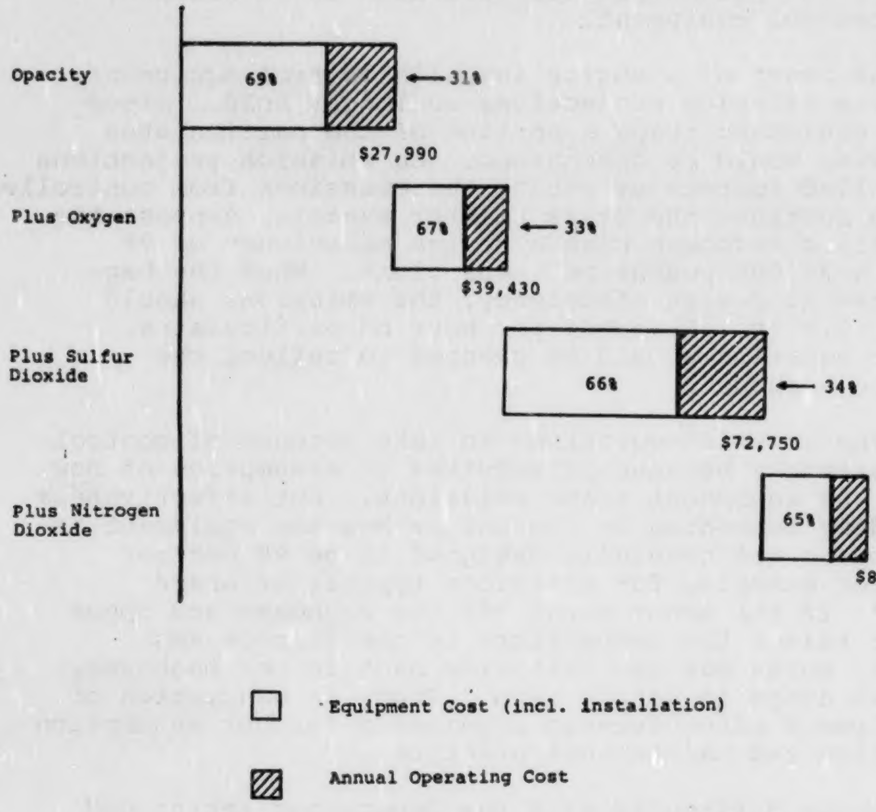
*See EPA, Compilation of Air Pollutant Emission Factors, AP-42, 2d ed. (March 1975).

**Ibid., Section 7.9; EPA, Air Pollution Engineering Manual, AP-40, 2d. ed., p. 269 (May 1973).

***EPA, Compilation of Air Pollutant Emission Factors, AP-42, 2d. ed., Section 7.9 (March 1975).

An alternative method to determine emissions is to measure them directly in a waste gas stream by installing monitoring instruments in ducting or in stacks. While direct emissions monitoring is technically feasible,* the costs are too high for widespread use.**

Sample Monitoring Costs for Emissions



Source: EPA Survey of Emission Monitoring Costs, Feb., 1975

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*See generally, "Requirements for Submittal of Implementation Plans and Standards of Performance for New Stationary Sources: Emission Monitoring," 40 Fed. Reg. 46239 (Oct. 6, 1975); EPA, Field Operations and Enforcement Manual for Air Pollution Control, Vol. III: Inspection Procedures for Specific Industries. APTD-1102 (Aug. 1972).

**EPA has recognized the relatively high cost of emissions monitoring by limiting the need for continuous emissions monitors (other than opacity monitors) to fossil fuel-fired generating plants, petroleum refineries, sulfuric acid plants, and nitric acid plants. See "Requirements for Implementation Plans," 40 Fed. Reg. 46239.

Unless there is a significant breakthrough in the costs of emissions monitoring, measuring directly the mass of pollutants in a source's emissions will realistically be applied to only a small number of large sources.

Opacity standards define emission levels in terms of the relative opacity or smoke content of the emissions plume. (The general opacity standard for stationary sources in Connecticut is 20 percent.*) The opacity test enables Department inspectors to determine compliance visually, without costly emissions tests or monitors. An inspector, can stand outside the plant grounds, and with modest training in observation, compare the opacity of a smoke plume with a series of shade gradients on a hand-held chart.** Since this test can be used easily even after control equipment is installed, opacity standards remain a useful standard for testing emissions compliance. This usefulness is limited, however, by the fact that they apply only to sources with visible particulate emissions, which represent only 20 percent of the sources to which abatement orders have been directed.

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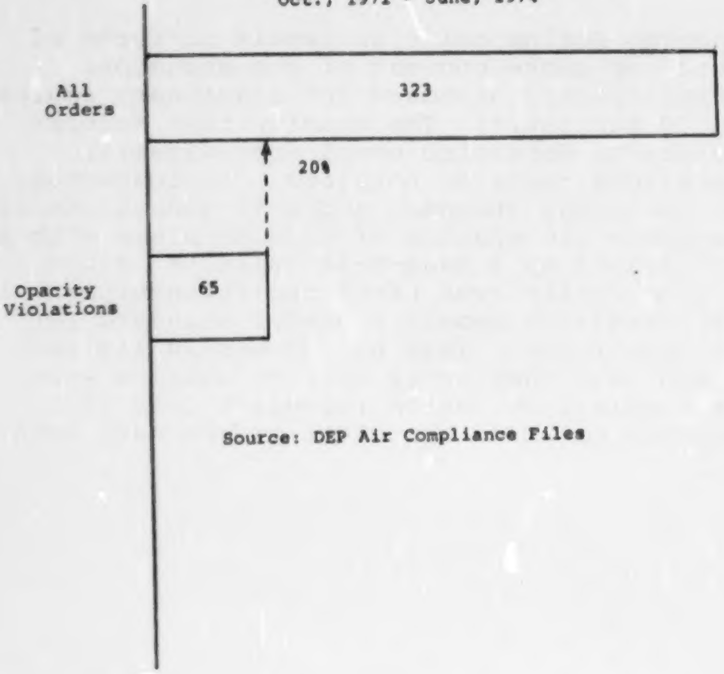
*DEP, Regulations for the Abatement of Air Pollution, §19-508-18(a)(1)(i).

**For a fuller description of this detection technique, see "Reference Method 9-Visual Determination of the Opacity of Emissions from Stationary Sources," 39 Fed. Reg. 39874-39875 (Nov. 12, 1974); see also "New Source Performance Standards for Fossil Fuel-fired Steam Generators: EPA Response to Remand," 40 Fed. Reg. 42045-42050 (Sept. 10, 1975).



Sources Issued Abatement Orders, Oct., 1971 - June, 1974

Source: DEP Air Compliance Files

Because of the difficulty of using emissions equations, the high cost of emissions monitoring, and the limited application of opacity standards, emissions standards have only limited usefulness once a source owner installs control equipment. Regulatory agencies need new standards that apply directly to operation and maintenance of control equipment.

Detection

Improper O&M is easy to hide, creating a strong temptation for a source owner not to operate its control equipment. Since most control equipment can be turned on or off easily, sources can often evade detection by not operating the control equipment until an inspector appears, then merely flicking a switch. By the time the inspector walks from the plant gate to the control equipment, the equipment is operating properly.

Control Equipment can be Turned On and Off Easily

Control Equipment	ON/OFF Control
Baghouse	Blower
Elec. Precipitator	Blower/Power to Collection Plates
Afterburner	Blower/Burner
Low Energy Scrubber	Blower/Water Pump
High Energy Scrubber	Blower/Water Pump

Source: Interviews with DEP Air Compliance Staff, Enforcement Unit

Proof Of Violation Period

Operation and maintenance costs are substantial only when cumulated over time. To offset savings from cumulative improper O&M, violations must be established and proved for the full period over which they occurred. Yet regulatory agencies cannot permanently station inspectors in plant facilities; they need an alternative, manageable way to prove continuous O&M violation in order to generate an incentive large enough to match the savings from improper O&M.

Remedy

Even assuming detection and proof of continuous improper operation and maintenance, traditional remedies are inadequate to encourage proper O&M in the future:

- Injunctions against future violations rest on the contempt power for enforcement, a device seldom used by courts and available only after lengthy and cumbersome litigation;
- Court-assessed fines, when imposed, follow no objective standards and thus bear no relation to the economics of the underlying O&M violation;
- Criminal sanctions are inapt and unlikely to be imposed.

Agencies need an administrative remedy which removes the economic benefits from improper O&M and makes proper operation pay.

GOALS FOR AN O&M PROGRAM

Against this enforcement setting, an effective program to ensure proper operation and maintenance must include tools:

- To establish performance levels for control equipment;
- To detect O&M violations at manageable administrative cost levels;
- To prove continuous O&M violation without extraordinary investigative cost;
- To set and impose economic remedies just large enough to make proper operation and maintenance pay.

CHAPTER II

A PROPOSED ENFORCEMENT PROGRAM FOR O&M: ADMINISTRATIVE TOOLS AND ECONOMIC REMEDIES

OVERVIEW OF MAJOR COMPONENTS AND STEPS

By using new, easily developed types of standards, existing detection techniques, monitoring systems which are cheaper but as reliable as emissions monitors, and economic remedies, the Department can solve the major O&M enforcement problems and effectively ensure proper operation and maintenance of installed control equipment. Moreover, it can accomplish this goal without additional cost to the owners of controlled sources who operate and maintain them properly. This approach should be both effective and economical.

The CEP proposes an O&M Enforcement Program for the Department which relies on four major components:

A limited permit program applicable only to regulatees who are found to be operating improperly after notice of their O&M obligation.

Standards of control equipment performance based on operating parameters of the equipment -- parameters such as pressure drop, air flow, water flow, water pressure, and temperature.

Continuous monitors to measure and record emissions and/or performance of operating parameters.

Economic assessments based on the cost savings from improper operation and maintenance and/or monitoring.

The remaining sections of this chapter explain each of the four key elements of this program and how they address the enforcement problems described in Chapter I. Here is a brief overview of how the O&M program would work as applied to controlled sources:

When a source owner installs control equipment, the Department learns of the installation because it has either issued an abatement order or a new source permit requiring the equipment, or the owner registers the equipment with the Department.* The Department advises the owner of his obligation to operate and maintain properly; under the O&M program, the Department will also advise the owner of the enforcement consequences of improper O&M. Thereafter, if the owner operates and maintains the source properly, he faces no burdens or costs under the O&M enforcement program. If the Department detects (1) an emissions violation by a controlled source, or (2) control equipment being operated in a manner inconsistent with the operating conditions of an emissions test that demonstrated compliance with emissions standards, it will issue an order which requires the regulatee to obtain an O&M permit. The permit will contain three kinds of requirements:

- A timetable for developing O&M standards, expressed as performance levels for a set of operating parameters that reflect proper operation of the control equipment. For high energy scrubbers, for example, the parameters might be pressure drop across the venturi, water flow, and water pressure. The timetable will require the regulatee to propose parameter standards based on manufacturers' specifications and emissions test results.

- A timetable for installing continuous monitors and recorders either of emissions or of performance of the operating parameters for which standards have been set.

- A condition that the regulatee provide assurances of future proper O&M by agreeing to accept the burden of proving continuous proper O&M in the event the Department detects another O&M violation in the future.

The purpose of developing parameter standards and of installing parameter monitors is to enable both the Department and the source owner, at relatively little expense, to watch source operations closely against precise, source-specific performance standards. The purpose of requiring the regulatee to accept the burden of proving compliance is to make it possible to determine how long a future occurrence of improper

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*See DEP, Regulations for the Abatement of Air Pollution, §19-508-2(e).

O&M continued before the Department learned of it.

A first offender who receives an O&M order can comply with the standard-setting and monitoring requirements in the permit at relatively low cost -- not more than $4200 in the first year (including emission tests) and $1200 per year thereafter for 98 percent of the sources in Connecticut.* If the regulatee complies and continues to operate and maintain properly, he faces no assessment by the Department.

For regulatees who refuse to comply, however, economic assessments eliminate the economic value of non-compliance. Part of this economic value is avoiding the expense of developing standards and installing monitors. Of much greater economic value is avoiding effective enforcement of these standards, because better enforcement reduces the chance to make large savings from shutting down control equipment. Without some equalizing incentive, regulatees would quite rationally refuse to comply.

The economic assessments proposed in this Report would provide the necessary equalizing incentive. A regulatee who operates a source without an O&M permit required by an order faces assessment for each month of such operation. The assessment is based on the cost of proper operation and maintenance and the cost of monitoring. It represents the monthly savings the regulatee could realize by not operating the control equipment and by not monitoring. Once parameter standards are established and monitors installed, assessments for future violations would also be based on the cost of proper operation and maintenance or the cost of proper monitoring, as the case may be. Once again, the assessment fully matches the cost savings from non-compliance.

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*Compliance would require a set of emission tests and the installation and operation of monitoring equipment for certain operating parameters. The emission tests cost an average of about $2000 and generally not more than $3000 for 98 percent of the cases, based on tests performed in Connecticut. Monitoring equipment should not exceed an annualized cost of $1200 at 15 percent for 10 years assuming 10 percent inflation. The cost is likely to be much less for certain types of monitors, and would go down further if inflation falls below 10 percent. See the Appendix to Part II of this Volume.

Since it equalizes -- and takes away -- the incentive not to comply, the economic assessment provides a fair and effective enforcement remedy. It is fair to the regulatee because it protects him from excessive, non-economic fines or penalties. It is fair to the regulatee's competitors because it protects them from the competitive advantage scofflaws otherwise would enjoy. It is effective because it makes compliance a profitable investment.

Five regulations provide the legal basis for the proposed O&M program:

1. Substantive O&M Regulations define O&M violations and describe the O&M permit requirement which detection of a violation triggers.

2. Assessment Regulations for Failure to Operate and Maintain Properly apply to violations of O&M standards and define how assessments are calculated for O&M violations.

3. Assessment Regulations for Operating Without an Operation and Maintenance Permit apply to operating without an O&M permit and define how assessments are calculated for such operations.

4. Assessment Regulations for Failure to Monitor apply to violations of monitoring standards and define how assessments are calculated for monitoring violations.

5. Assessments Regulations for Non-compliance With a Monitoring Timetable apply to violations of monitoring timetable requirements and define how assessments are calculated for such delinquencies.

The O&M program would impose costs on regulatees only after they had prior contact with the Department and ample notice of their obligation to operate and maintain properly and of the enforcement consequences of improper O&M. For regulatees who operate properly, the O&M enforcement program has no application and imposes no costs -- either on regulatees or on the Department. The program affects the relatively small number of regulatees who, after notice and warning, are found to be operating control equipment improperly. These regulatees are subject to specific O&M performance standards for their control equipment, and to civil assessments which equalize -- and take away -- the economic benefits from improper O&M. Assessments are large enough to provide an adequate incentive to comply, but are limited by the costs of compliance and thus protect all regulatees from the risk of administrative abuse.

TRIGGERING THE O&M PERMIT REQUIREMENT

Regulatees who operate controlled sources in a manner consistent with (1) emissions standards and/or (2) operating conditions of an emissions test which demonstrates compliance with emissions standards are unaffected by the O&M program. The requirement to obtain an O&M permit applies only when a source exceeds these standards or conditions.

The Department can use four techniques to detect cases of improper O&M:

1. General visual inspection of control equipment. This approach consists of an inspector examining the control equipment visually for obvious deviations from proper operating procedures (e.g., non-operation of control equipment) or for visible evidence of improper maintenance (e.g., holes in ducting). Unless precise conditions of control equipment operation and maintenance are set, general visual inspection is useful to detect only the grossest violations. In cases where improper O&M is flagrant, visual inspection can provide the evidence necessary for a Department engineer to estimate the effectiveness of the control equipment and to use emissions equations to calculate emission levels. For example, if an inspector finds a source being operated with bypass vents open and control equipment shut off, a Department engineer can reasonably estimate that the control equipment had nearly zero effectiveness, and could calculate emissions based on input factors.

2. Opacity inspection and monitoring. As explained in Chapter I, inspectors can usually detect opacity violations visually using a hand-held chart, and often can perform the inspection outside plant premises and without notice to the regulatee. This detection method can be used with roughly 20 percent of the sources. In addition, about 20 percent of all controlled sources have installed continuous monitors to measure opacity. Observation of these instrument readings can supplement visual inspection of opacity.

3. Inspection of the performance of operating parameters. This method consists of examining the level of performance of operating parameters (e.g., temperature, gas pressure, water flow) which reflect the operations of process and control equipment. Inspectors can observe readings on installed gauges or use portable, hand-held gauges to test operating conditions. For 78 percent of the state's 450 major (100-ton) sources, the proper operating levels of such

parameters are known from emissions tests already performed. For other sources, ranges of proper performance are known from emissions tests on similar equipment.

4. Require an emissions test. If the Department acquires general evidence of an emissions violation, such as visibly poor maintenance or wide variance of operating parameter performance from accepted ranges, it can require that the source be tested under conditions identical to those existing at the time of inspection.* Such tests can determine the source's ability to meet emissions standards under such conditions. If the test shows the source cannot meet standards if operated under the conditions existing when it was inspected, the Department can reasonably conclude an emissions violation occurred.**

Upon detecting a source operating in excess of emissions standards or at variance with the conditions of an emissions test which demonstrates compliance, the Department will issue an order which requires the responsible regulatee to obtain an operation and maintenance permit in order to continue operating. The permit will contain timetables for establishing specific O&M standards for the source and for installing monitoring equipment.

SETTING STANDARDS FOR PROPER O&M

Emissions standards provide one test of proper operation and maintenance. As explained in Chapter I, however, their direct application to controlled sources is limited by the difficulty of using emissions equations, the high cost of emissions monitoring, and the limited number of sources with visible emissions. To supplement and in large measure supplant the use of emissions standards for O&M enforcement, regulatory agencies can develop and apply standards based on the operating parameters of installed control equipment.

Parameter Standards

Parameter standards are performance standards for selected operating characteristics of control equipment, set at levels which reflect effective pollution reduction. Just as speed limits have been established in many states at levels designed to conserve fuel, operating standards for control equipment can be set at levels designed to lower emissions. In each case, a standard which directly affects equipment operation (vehicle speed or, e.g., pressure drop) indirectly reflects equipment performance (fuel economy or emissions). If operating standards are developed by relating emissions to the performance of carefully selected operating parameters, such standards can serve as direct standards of proper operation and maintenance and indirect indicators of emissions. For example, by measuring the pressure drop across a high energy scrubber, the water flow rate through the scrubber, and the water pressure through the spray nozzle during an emission test that demonstrates compliance, the operator and the Department can determine what performance level of these three parameters corresponds with desired emissions.

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*Sec. 19-508-103 of the proposed O&M regulations, Part III of this Volume.

**See generally the legal memorandum, "Evidentiary Status of O&M Data" in Volume VI, p. 233 of this Report. Evidence of poor O&M can also be used as indirect proof of an emissions violation.

The City of Los Angeles and some states currently use parameter standards to an extent. Los Angeles and at least the states of Connecticut, Pennsylvania, and New York write some operating standards into permits for new stationary sources based on the results of emissions testing. Some states also have included a few parameter standards among the air pollution abatement regulations in their State Implementation Plans.* These developments should be encouraged and expanded: parameter standards can be developed and enforced precisely and inexpensively.**

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*See, e.g., Conn. DEP, Regulations for the Abatement of Air Pollution, Section 19-508-20(e)(1), which specifies operating temperatures for incinerators.

**EPA may be moving in this direction. It now requires monitoring of operating parameters for certain classes of new sources. See, e.g., "Standards of Performance for New Stationary Sources: Electric Arc Furnaces in the Steel Industry," 40 Fed. Reg. 43850-43854 (Sept. 23, 1975). EPA has not indicated whether it intends to develop standards expressed as performance levels of monitored operating parameters, however. In the absence of parameter standards, monitoring results can be used to determine improper O&M only indirectly, by trying to show an emissions violation from operating data. If EPA developed parameter standards, it could use monitoring results directly by comparing them to enforceable parameter standards.

While parameter standards can occasionally be developed for classes of sources,* the specific operating procedures which enable a controlled source to continue to meet emissions standards often vary greatly among identical types of control equipment. For example, the proper operating practices for two identical baghouses may vary with the type, size, and concentration of pollutants entering the device, and with the temperature of the gas stream.

Identical Control Equipment
Requires Different O&M: Baghouses

Major O&M Activity	Proper O&M Varies With:
Blower Speed	. Pollutant concentrations entering baghouse
Filter Bag Material	. Temperature of gas entering baghouse . Type of pollutant . Size of pollutant particles
Frequency of Bag Replacement	. Pollutant concentrations entering baghouse . Temperature of gas entering baghouse . Number of bags

Source: EPA, Air Pollution Engineering Manual, AP-40, 2d ed. (May 1973).

Because of this variation, parameter standards for many sources will need to be developed specifically for each source.

Determining proper parameter standards for individual sources is technically feasible for the Department to do. Manufacturers' specifications can help provide the information necessary to correlate operating practices with resulting emissions. Moreover, once control equipment is installed, an emissions test can yield specific data on operating conditions necessary to achieve desired emissions levels. For example, a wet scrubber used to control particulate emissions from an asphalt batching plant may require more water flow (a higher water-gas ratio) as the quantity of fine mineral dust in the aggregate mix increases, and more water pressure as the operating temperature increases.* By observing these parameters during emissions testing, the regulatee and the Department can set operating standards which correspond to proper emission levels.

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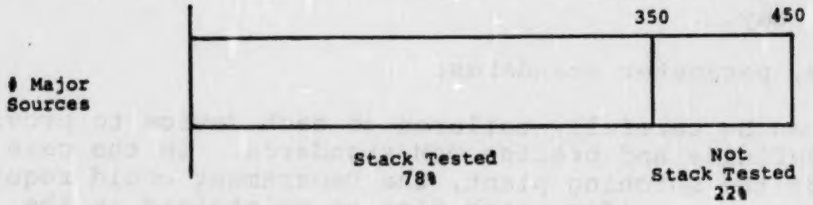
*See the Connecticut regulation cited above.

Since an emissions test can provide most of the data necessary to develop parameter standards for a source, the cost of setting standards is relatively low. The average cost of an emissions test is $2000, and has not exceeded $3000 for 98 percent of the sources tested in Connecticut. Moreover, since owners of untested controlled sources will normally be required to develop parameter standards only after the Department detects an emissions violation, this cost will fall only on those regulatees whose sources exhibit evidence of poor O&M.

Most of Connecticut's major sources have collected the data needed to set parameter standards from emissions tests already performed.

Major Sources (100 tons*/year) Stack-Tested



*100 Tons or More per Year of Emissions without Control Equipment

Source: DEP Air Compliance Files, Enforcement Unit, Aug., 1975

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*See EPA, Air Pollution Engineering Manual, AP-40, 2d. ed. pp. 325-333 (May 1973).

For these sources, the operating and maintenance conditions under which an emissions test was performed, if it demonstrated compliance with emissions standards, can stand as enforceable parameter standards. For other sources, the Department can require submission of data and the results of emissions tests to generate the necessary information in accordance with a timetable prescribed as part of the O&M permit.

Once proper operating conditions are determined, the Department can impose them as specific operation and maintenance standards. Thereafter, operating a source in a manner inconsistent with the parameter standards is an O&M violation. By supplementing emissions standards with parameter standards, the Department avoids the difficult burden of trying to detect and prove emissions violations, either directly using emissions data or inferentially using evidence of poor O&M. Instead, it has a set of equally reliable but much more enforceable O&M standards.

Parameter standards will also serve to educate source owners and their staff about proper equipment operation. Parameter standards link operating conditions to emissions. Since plant employees can observe and measure changes in operating conditions more readily than changes in emissions, they can acquire closer control over equipment performance. A sudden drop in the air pressure differential across a scrubber, for example, with water flow and water pressure remaining constant, pinpoints an operating problem much more directly than a recorded increase in emissions. At the same time, plant employees should be more accustomed to using parameter standards; they work with operating parameters from day to day.

In sum, parameter standards:

* can be carefully tailored to each device to provide definite and precise O&M standards. In the case of the batching plant, the Department could require that a specific water flow be maintained in the scrubber based on the maximum fines content expected in the aggregate mix at any time, a water pressure based on maximum operating temperature, and a gas pressure drop sufficient to achieve the desired cleaning effectiveness.

* can be enforced much more easily and cheaply than emissions standards. Inspectors can detect violations using inexpensive portable equipment (e.g., a portable monometer to measure the gas pressure

in a baghouse) or by observing recorded data from continuous monitors (e.g., differential pressure gauges, water flow gauges, temperature gauges).

* can be selected to focus on areas where cost saving cutbacks are likely (e.g., blower speed or pressure drop, energy usage), and where detection is easiest (e.g., where pressure gauges, voltage gauges or electric meters can be used).

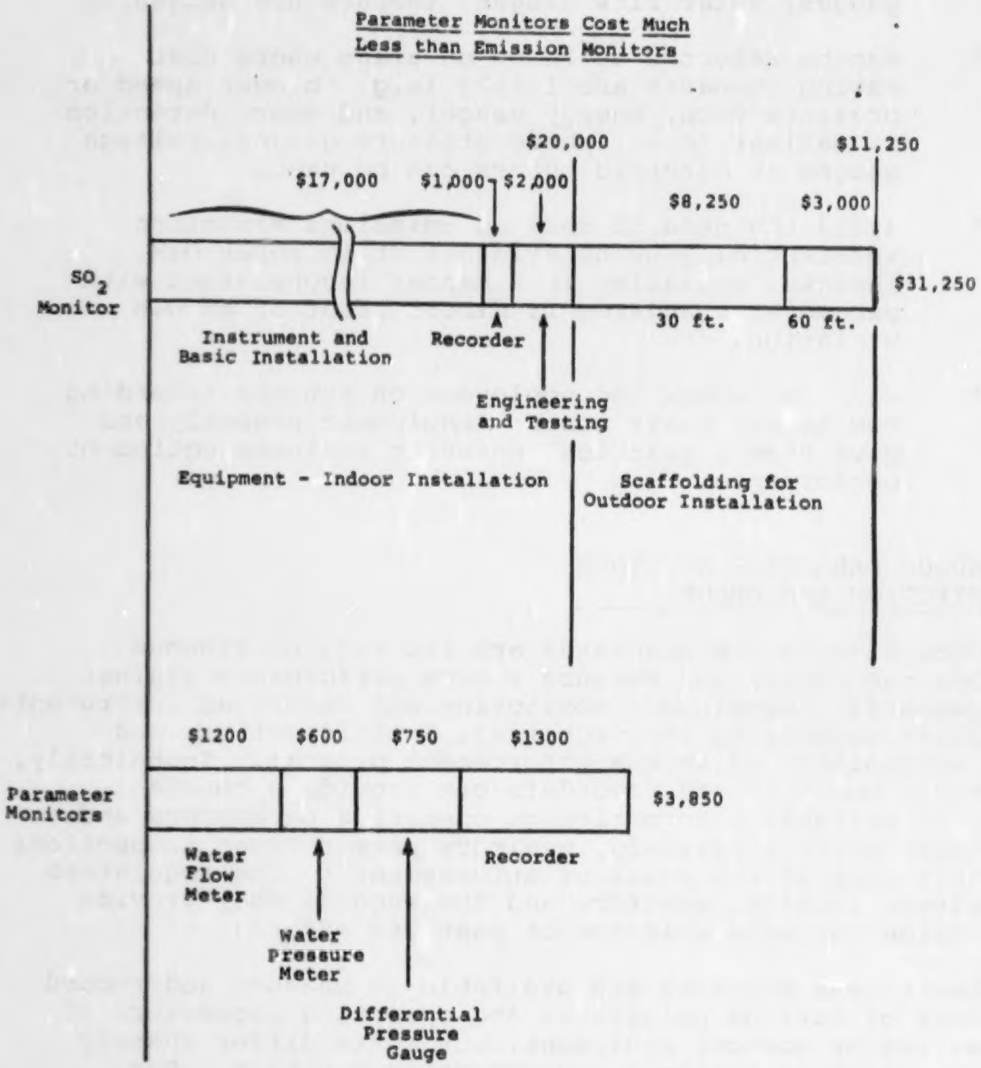
* avoid the need to show an emissions violation inferentially using evidence of improper O&M. Instead, operating in a manner inconsistent with parameter standards is direct proof of an O&M violation.

* educate owners and employees on sources regarding how to use their control equipment properly and give them a practical means to evaluate equipment performance.

CONTINUOUS PARAMETER MONITORS FOR DETECTION AND PROOF

Once binding O&M standards are imposed, continuous monitors can record and measure source performance against the standards. Continuous monitoring and recording instruments contribute greatly to the technical, administrative, and legal workability of an O&M enforcement program. Technically, continuous monitors and recorders can provide a constant supply of reliable information on operating parameters and emissions; administratively, monitors permit fewer inspections and shift some of the costs of enforcement to the regulatees themselves; legally, monitors and the records they provide can provide reliable evidence of past O&M efforts.

Continuous monitors are available to measure and record emissions of various pollutants and operating parameters of process and/or control equipment, but costs differ sharply between emissions monitors and parameter monitors. For example, monitors for sulfur oxide emissions cost from five to eight times more than monitors for operating parameters of a scrubber used to control the emissions.


Parameter Monitors Cost Much Less than Emission Monitors

$20,000
$11,250
$17,000
$1,000
$2,000
$8,250
$3,000
SO$_2$ Monitor
$31,250
Instrument and Basic Installation
Recorder
30 ft.
60 ft.
Engineering and Testing
Equipment - Indoor Installation
Scaffolding for Outdoor Installation
$1200
$600
$750
$1300
Parameter Monitors
$3,850
Water Flow Meter
Recorder
Water Pressure Meter
Differential Pressure Gauge

Sources: EPA Survey of Emission Monitoring Costs, Feb., 1975; DEP Survey of Scrubber Parameter Monitoring Costs, July, 1975

Because of the high cost, emissions monitors can be justified only for large sources. Instead, parameter monitors provide an inexpensive, equally reliable record of the operating performance of control equipment. Coupled with legally binding parameter standards, parameter monitors can detect O&M violations and provide direct proof of continuous improper operation and maintenance. A monitor which measures pressure drop across the venturi of a high energy scrubber, for example, would indicate both the occurrence and the duration of a pressure drop which fell below an applicable pressure drop standard.

The Tampering Problem

While continuous monitors and recorders will show improper O&M caused by inattention or neglect, a source bent on evading compliance can often distort monitoring records without great difficulty.

Vulnerability of Monitors to Tampering

Elements of Monitoring System	Tamperability
Sensor	Generally not easily tamperable without visible signs
Measuring Device	Calibration controls generally vulnerable to tampering
Recorder	Can be sealed to prevent tampering, except periodic maintenance requires access
Power Source	Easily turned off; detection difficult unless power is metered or switch sealed

Source: Interviews and manufacturers' representatives; interviews with DEP Air Compliance staff, Monitoring Unit and Enforcement Unit.

Altered monitoring data can mask improper O&M and eliminate an important source of operating evidence. In the absence of other legal controls, a scofflaw could distort or fail to maintain monitoring records, shut down his control equipment, reap large savings from the shutdown, and frustrate the Department's ability to show a violation or its duration once the shutdown or tampering were detected.

To discourage shutdown or tampering with monitoring equipment, the O&M permit will contain a condition that the regulatee provide assurances to the Department of future proper O&M. Such assurances consist of the regulatee agreeing, in the event the Department detects another O&M or monitoring violation, to accept the burden of proving continuous proper operation and maintenance since the last inspection, and to limit the types of evidence acceptable to show proper O&M. The restriction would permit (1) monitoring evidence and (2) evidence from third party suppliers -- electric bills for control equipment operation, fuel bills for afterburners, vouchers for replacement of catalytic elements, etc. If a regulatee who failed to monitor or who tampered with monitoring equipment could not show otherwise that he had complied with the applicable operating standards during the period of the monitoring violation, he would be subject to an assessment equal to the value of violating operating standards over the same period.

A regulatee who has operated and maintained properly runs very little risk of being assessed even if it has had a monitoring failure. It will probably be able to show that the equipment was being operated and maintained with other evidence. However, the source that has failed to monitor or that has tampered with the monitors will find it much more difficult to carry this evidentiary burden.

DETERMINING ECONOMIC ASSESSMENTS

Four civil assessments back up O&M enforcement by eliminating the value of non-compliance. This section summarizes the use of economic assessments in O&M cases. Part II explains in more detail the derivation and methodology for calculating assessments.

1. A civil assessment for operating without an operation and maintenance permit. A source owner who receives an order requiring him to obtain an O&M permit has a strong economic incentive not to comply. Initial and continued compliance with the operating and maintenance and monitoring requirements of the permit would require substantial

annual expenditures with little or no return. By not complying, a regulatee saves these expenses and obtains an opportunity to invest the funds that should be spent on O&M and monitoring in another more profitable project. Economic civil assessments counterbalance the benefit the regulatee could obtain by investing O&M and monitoring funds elsewhere. By matching -- and removing -- the economic gain from non-compliance, civil assessments provide enough economic incentive to make compliance worthwhile, yet avoid overkill by limiting assessments to this economic gain.

A regulatee who operates without an operation and maintenance permit can reinvest these cost savings of non-compliance:

- the cost of developing parameter standards. This cost is relatively small and one-time, consisting largely of the costs of an emissions test.
- the cost of installing, operating, maintaining, and periodically replacing monitoring equipment for the operating parameters subject to operating standards. This cost is also fairly low, but continues over time. (For example, the annualized cost for a parameter monitoring system for a high energy scrubber with recirculating water would be about $1150 after taxes, assuming 10 percent annual inflation and 15 percent cost of capital for 10 years. See Part II, Chapter I and Appendix to this Volume.)
- the cost of operating and maintaining installed control equipment and replacing it as it wears out. This cost is substantial and continues as long as the process is being controlled. It is the major incentive for non-compliance. (A high energy scrubber which controls particulates from a source with a gas flow of 25,000 CFM and operates 12 hours per day, for example, has annualized equipment costs of about $6600 and annualized operating costs of about $49,000, assuming 10 percent annual inflation and 15 percent cost of capital for 10 years. See Volume II, Part V of this Report).

The assessment for operating without an O&M permit is designed to take away the benefits of not paying these costs and spending the money somewhere else. The assessment equals the monthly investment value of spending this money elsewhere, in investments which yield a return customary for the regulatee's industry. By equalizing and eliminating the benefits of non-compliance, the assessment makes compliance just as profitable as any other normal investment.

2. A civil assessment for failure to operate and maintain properly. This assessment applies to violations of operating parameter standards in an O&M permit. A regulatee who operates improperly saves the costs of proper O&M and can realize the economic value of investing this money elsewhere. To remove this benefit, the assessment equals the monthly value of not paying for proper O&M plus the yield the regulatee could obtain by investing elsewhere. It is almost identical to the assessment for operating without an O&M permit. The only difference is the absence in this assessment of a value for non-compliance with monitoring requirements.

3. A civil assessment for failure to monitor. A regulatee who fails to operate installed monitors does not depreciate the equipment and saves the operating costs of monitoring. It might also save the costs of proper operation and maintenance -- an enormously larger saving -- if it does not operate its control equipment because it knows it is not monitored. To discourage improper operation and maintenance of control equipment during periods of monitoring failure, and to discourage shutting down or tampering with monitors in order to hide improper O&M, this assessment is two-tiered. The assessment for monitoring violations is initially identical to the assessment for failure to operate and maintain properly. If the regulatee shows that it has operated its control equipment properly during all or part of the monitoring failure, then the assessment automatically drops to a much lower level for those periods of time. The lower assessment equals the benefits the regulatee could obtain by investing the costs of proper monitoring elsewhere. Since these costs are low, the assessments will be quite small.

4. A civil assessment for non-compliance with a monitoring timetable. This assessment applies to delinquency in complying with a timetable in an O&M permit to install monitoring equipment. It is calculated in exactly the same way as the assessment for failure to monitor.

CONCLUSION

The tools of O&M enforcement -

- a limited permit program imposed only on violators with prior notice;
- new O&M standards, especially parameter standards;
- parameter monitoring requirements and evidentiary safeguards; and
- economic assessments which remove the benefits of non-compliance;

combine together into an administrative program that:

- imposes no new administrative or legal requirements on regulatees which operate installed control equipment properly;
- imposes no assessments on violators who respond promptly;
- imposes economic remedies when necessary that are always just large enough to ensure that proper O&M pays; and
- restrains administrative discretion through the use of objective economic standards already familiar to businessmen.

The proposed O&M program should permit the Department to ensure proper operation and maintenance of air pollution control equipment. It should do so effectively, economically, and fairly. It focuses on regulatees who have clear notice of their obligation to operate and maintain properly, and even for them, imposes no assessments on those who respond promptly and responsibly. For regulatees subject to assessment, the program imposes assessments economically, matching and removing the benefits of non-compliance.

Economic civil assessments provide a workable intermediate response. They provide just the right level of incentive, and they do so promptly. They are demonstrably fair; they assess violators only what they have gained from non-compliance. (In the process they protect law-abiding companies against unfair competition by scofflaw competitors.) The regulations' safeguards ensure that those subject to regulation will be treated fairly, and that they can always obtain review if they feel aggrieved. The economic basis of the regulations ensures an adequate but not excessive incentive, protects against possible abuse of administration discretion, and provides an objective standard for review and correction.

MODEL STIPULATION

The operation and maintenance permits the Department issues will contain a condition requiring the permittee to provide satisfactory assurances of future proper operation and maintenance. Since the regulatee has already violated O&M standards, the Department is justified in requiring tangible evidence of future proper performance. One type of assurance which will be used commonly is an evidentiary stipulation whereby the regulatee agrees to accept as a permit condition certain burdens of proof in the future and certain limitations of the types of evidence he may present to meet these burdens.

What A Stipulation Is

A stipulation is simply a legally binding agreement between two or more people. It is most often used to settle in an informal yet binding manner a dispute between two parties, such as an administrative agency and a regulatee. In a legal sense a stipulation is very much like a contract; the parties to the agreement exchange mutual promises either to perform or to refrain from performing certain actions. An example of a typical stipulation would be a settlement in which a person injured in an auto accident agreed to drop certain damage claims in exchange for the insurance company's full payment of others.

Stipulations are enormously useful -- chiefly for two reasons. First, they are effective yet very inexpensive. Once signed, they are legally binding and fully enforceable. They are negotiated privately and do not require the formalities of an order.

A second advantage of the stipulation is its flexibility. Often an agreement will include clauses governing its enforceability, both present and in the future, while also setting potential remedies should a breach occur. Other provisions may guard against fraud. For example, returning to the personal injury example, the insurance company may agree to pay future medical expenses for treatment, but may also want the right to have its doctors examine the person periodically to guard against padding or fraud.

The Importance of Stipulations To the O & M Enforcement Program

Economic remedies are calculated to counterbalance the value a regulatee derives from every day of noncompliance. For this enforcement approach to work, the State must know and be able to prove how long a regulatee has failed to comply. This is difficult when the noncompliance is failure to operate and maintain properly. A flick of a switch is often all that is required to turn a control system on or off.

The Department's first response to this problem is to require continuous recorded monitoring. Section 19-508-3 of the O&M regulations provides the Department with the authority to require the installation and operation of continuous monitoring equipment.

But monitoring equipment is subject to tampering. By recalibrating the instrument, by deceiving the sensitive probe that actually "reads" the process being monitored, or by simply turning off the power, a determined regulatee can falsify or avoid making monitoring readings. For example, a small high intensity light installed to shine on the temperature sensor inside an incinerator could produce an overly high reading just as holding a match under a home thermostat does. In this way a scofflaw can present an apparent record of proper incinerator performance while actually saving fuel by burning at lower temperatures. To discourage tampering, the Department must be able to create a special value for accurate monitoring information and a special cost for doctored information. Stipulations can be very useful in doing this.

The terms of the model stipulation provide that if the regulatee is again found to be violating O&M standards governing the operation of his source, the regulatee must bear the burden of proving that it has not been in continuous violation between the date of the last Department inspection and this violation. Thus the burden of proof of nonviolation for the entire period since the last inspection falls on the source. This burden makes monitoring evidence very valuable, for it will show a performance record since the last inspection. If the regulatee tampers with the monitor, he assumes the risk that the Department might discover the tampering and consider the monitoring evidence unreliable. If this happens, the regulatee is faced with the prospects of proving proper operation with other evidence or losing the case.

Once again, a determined regulatee could manufacture other evidence that appeared to show proper O&M, even though the regulatee had not operated its control equipment. For example, the owner could have one of his supervisors testify that his workers regularly replaced worn-out filter bags in his baghouse when in fact many bags had been burned out for months. Or the owner could show fuel records supposedly showing fuel purchases for his afterburner, even though the fuel was actually used to heat the office. The problem for the Department is that the regulatee controls this information, and the Department cannot effectively verify it.

Here again stipulations can serve a useful function. The stipulation would limit the types of evidence the regulatee could present to show proper O&M after a second violation was found. The stipulation would exclude evidence which cannot be independently verified, e.g. by third parties. If a question of shutting down control equipment existed, electric meter readings for the equipment could be presented, for example. Or repair bills could be presented for service work performed. While not eliminating the possibility of fraud, these limitations on evidence make fraud harder and riskier. At the same time, the stipulation puts few burdens on other, law-abiding permittees. These owners should have both monitoring evidence and vendor receipts to meet the stipulation burdens easily.

Using The Model Stipulation

The model stipulation is written to be inserted as a condition in an O&M permit. It also could be used in an escrow (or other surety) agreement with the same effect as a permit condition: the regulatee would be liable to forfeiture of the surety amount unless it could prove proper O&M in accordance with the stipulation.

The model stipulation can be used exactly as it is, or it can be modified to list the exact kinds of evidence admissible under its terms. In cases where the regulatee has cooperated and responded promptly to the Department, for example, the Department and the regulatee may agree to expand the types of admissible evidence to include internal business records of the regulatee. In short, the model stipulation is only a model, usable as is, but adaptable to the needs of any particular case.

Text of The Stipulation

The following condition can be inserted into an O&M permit:

"As a condition of accepting this permit, the permittee agrees and accepts that in any future civil action, including any administrative proceeding, brought by the Department against the permittee for violation of operation and maintenance standards in Section 19-508-3 of the Regulations or in this Operation and Maintenance Permit for the same source(s) which is (are) the subject of this permit, evidence of such violation by any such source shall constitute evidence of continuous failure by the permittee to operate and maintain the source properly between the date of the most recent inspection of the source by the Department and the date of such violation, and proof of such violation shall constitute proof of continuous failure by the permittee to operate and maintain the source properly between such dates. Upon a showing of such violation, the permittee shall bear the burden of producing evidence that it did continuously operate and maintain the source properly, and the risk of non-persuasion by a preponderance of the evidence shall be born by the permittee. The permittee may meet these burdens solely by producing:

(a) business records of the purchase of commodities or services used to operate and maintain air pollution control equipment which processes emissions from the source(s) in violation, and/or

(b) readings from monitoring instruments approved by the Department installed in such source(s) or in such air pollution control equipment."

[redacted]

PART II

CALCULATING ECONOMIC REMEDIES FOR IMPROPER OPERATION AND MAINTENANCE AND FAILURE TO MONITOR

CHAPTER I

THE ASSESSMENT FORMULA

Economic remedies must be just large enough to make compliance economically attractive: they must take away the entire benefit of noncompliance -- including whatever return the noncomplying person may be able to earn on the use of the money it has not spent on pollution control for however long the delay continues. Economic assessments will ensure voluntary compliance because they simultaneously remove the incentive to delay and guarantee those who comply a commercially attractive "return" on their abatement investments -- not having to pay the assessments. This "return" will be sufficiently attractive to make source owners feel that compliance pays because it is calculated at the cost of capital rate appropriate for each industry, i.e. because it is as large as the returns the source owner is obtaining on investments he has recently chosen to make.

Economic assessments are based on a simple economic calculus that is commonly used by businessmen in evaluating investment alternatives. An economic assessment is defined to be that payment which would, if made at the end of each month throughout a specified assessment period, have the same net economic impact on a company as the expenditures necessary for compliance with Department requirements throughout that assessment period. In other words, the present value of the stream of assessment payments made over the assessment period would equal the present value of the net flow of compliance costs over the same period.

A mathematical summary expression of the assessment formula proposed for use in O&M cases follows:

$$\mathrm{CA} = (\mathrm{PVO} + \mathrm{PVE})\ \mathrm{A} \tag{1}$$

$$\mathrm{PVO} = (1-\mathrm{T}) \left(\frac{1 + \mathrm{CC}}{\mathrm{CC} - \mathrm{RI}}\right)\left(1 - \left(\frac{1 + \mathrm{RI}}{1 + \mathrm{CC}}\right)^{\mathrm{AP}}\right) \mathrm{OP} \tag{2}$$

$$\mathrm{PVIE} = \left[(1-\mathrm{TC}) - \frac{\mathrm{T}}{(\mathrm{DL})(\mathrm{CC})}\left(1 - \frac{1}{(1 + \mathrm{CC})^{\mathrm{DL}}}\right)\right] \mathrm{CCE} \tag{3}$$

$$\mathrm{PVE} = \left[\frac{1 - \left(\frac{1 + \mathrm{RI}}{1 + \mathrm{CC}}\right)^{\mathrm{AP}}}{1 - \left(\frac{1 + \mathrm{RI}}{1 + \mathrm{CC}}\right)^{\mathrm{EL}}}\right] \mathrm{PVIE} \tag{4}$$

$$\mathrm{A} = \frac{(1 + \mathrm{CC})^{(1/12)} - 1}{1 - \dfrac{1}{(1 + \mathrm{CC})^{\mathrm{AP}}}} \tag{5}$$

The Economic Appendix to proposed Section 22a-6b-611 of the Civil Penalty Regulations for O&M explains the assessment formula, how it is derived, and how it is used; it also includes an example applying the formula in a specific case. Please refer to this Appendix which is in Part III of this Volume for these explanations.

CHAPTER II

DETERMINING THE COSTS OF COMPLIANCE

Civil assessments for improper operation and maintenance are designed to encourage continued compliance with emissions standards by taking away the economic benefits of failing to operate and maintain properly and of failing to monitor. These benefits include (1) saving the expense of buying monitoring equipment (2) saving the costs of operating and maintaining both control and monitoring equipment during the period of noncompliance (3) avoiding or reducing the wear and tear on these facilities and (4) avoiding the opportunity costs entailed when a regulatee expends money on no-return compliance projects rather than commercially profitable alternatives.

The most important single step in determining what benefits a delinquent regulatee obtains from noncompliance is determining how much the regulatee would have to pay out if it complied. The Department must be able to make this determination easily and reasonably accurately if an enforcement approach based on economic remedies is to work in the O&M area.

ESTIMATING THE COSTS OF O&M COMPLIANCE

The cost of compliance in O&M cases can be determined using the same methods used in emission violation cases. (See Volume II, Part II.) This is because the cost of continued compliance with O&M parameter standards is virtually identical to the cost of initial compliance with emission standards. In each case the owner of the source must anticipate the same continuing expenditures over time to operate and maintain control equipment and to replace it as it wears out. The only difference between the situation of the owner of a source that already has control equipment and the owner of a source on which equipment is yet to be installed is that the first owner has already spent money on the past purchase and operation of control equipment whereas the owner of the uncontrolled source must make these expenditures in the future. This is not a significant difference. Both owners will allocate their capital costs (chiefly the purchase price of the equipment) over the life of the equipment, and the resulting annualized charge will be identical in both cases. Each year the equipment is not in place or is not used (and therefore generally does not depreciate significantly) represents a saving of this annual charge and a saving of operation and maintenance costs.*

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* A simple example may clarify the point. Suppose the owners of two asphalt batching plants face identical control costs for the particulate emissions from their batching operations, say, \$54,000 for the equipment, which will last 10 years, and \$15,000 per year for operation and maintenance. Suppose also that both owners use straight-line depreciation over the useful life of the equipment, and that they also set aside money into a "sinking fund" to replace worn-out equipment at its replacement cost. For simplicity, assume that both owners can finance their expenses without interest. Finally, assume that equipment and O&M costs both increase annually at a 10 percent inflation rate.

When Owner A invests in pollution control, he faces an annual "expense" from then on of \$20,400 (1/10th of the \$54,000 equipment cost plus \$15,000 for O&M) times an inflation factor of 1.10 (base price plus 10 percent) compounded every year. In the fourth year of his investment, for example, his cost of compliance will be \$27,152 (\$20,400 x 1.10^3 = \$20,400 x 1.331 = \$27,152). In the sixth year, his cost that year will be \$32,864 (\$20,400 x 1.10^5 = \$20,400 x 1.611 = \$32,864).

If owner B waits to buy a baghouse until three years after owner A bought one, owner B will find the cost of buying and operating the baghouse has inflated at the rate of 10 percent each year. The cost he faces that year (owner A's fourth year) is one-tenth of the price of a baghouse that now costs \$71,874, plus \$19,965 for operation and maintenance -- a total of exactly the cost owner A faces in the same year. Similarly, if owner B waits five years after owner A, owner B will face a cost of one-tenth of \$86,994 plus \$24,165 for a total of \$32,864, again the same as owner A's cost of compliance for the same year.

In most air pollution cases, the costs of compliance can be estimated with the help of cost curves. These curves measure the relationship between one or two readily available facts -- primarily the volume of polluted air that must be treated and the type of pollutant involved -- and the cost of the necessary control measures. Thus, for example, for any particulate emission, the control costs (for either a baghouse, a wet scrubber, or an electrostatic precipitator) can be related to the flue gas flow rate of the process emitting the particulates. With these curves available, all a Department staff member need do to obtain reliable cost estimates is to

* determine what control technique (baghouse, scrubber, etc.) is installed on the source

* determine values for the key variables (gas flow rate, type of pollutant) on which the curves are based

* read the cost estimates off the appropriate cost curves.

The CEP has developed a full set of cost curves to aid the Department in estimating the cost of compliance in civil assessment cases covering emissions violations by uncontrolled sources. Since the cost of compliance is virtually the same for O&M violations by controlled sources, the same cost curves can be used in O&M cases. The chapter on "Determining the Cost of Compliance" (Chapter VII) in the Operating Manual dealing with emissions violations (Volume II, Part V) explains in detail the derivation, testing, and use of these cost curves.

Given the enormous variety of situations requiring control, there will inevitably be cases for which curves have not been developed. In these cases tests of Department staff indicate that estimates, accurate within 20 percent, can be obtained in one to sixteen hours a case. (See again Volume II, Part V, Chapter VII.) The fact that such estimates will be necessary for only a small percent (because most sources will not require assessments) of a small minority of all cases (because cost curves are available for the majority) makes the time required for making such case-by-case estimates an easily managed administrative cost.

An example will help clarify how cost curves would be used in most cases.

Using O&M Cost Curves: An Example

Suppose a brass smelting plant releases particulates from a reverbatory type furnace. The owner controls the emissions with a baghouse. From information furnished on the Department's registration form, the Department knows that the uncontrolled process emission rate is 252 pounds per hour and that the process weight rate is 7200 pounds per hour. Suppose the Department also knows from previous inspections that the currently installed hooding captures virtually all emitted particulates with the fan operating at 22,000 actual feet per minute (ACFM) during maximum loading conditions. Suppose the engineer visits the plant one day, sees a visible smoke plume, and finds the baghouse shut down and the emissions venting through an emergency bypass. With this information about operating parameters and type of control equipment, the Department engineer turns to the appropriate costing curves developed and maintained by the Department. The relevant curves follow.

Installed Cost Of Baghouses

-Particulate Control-

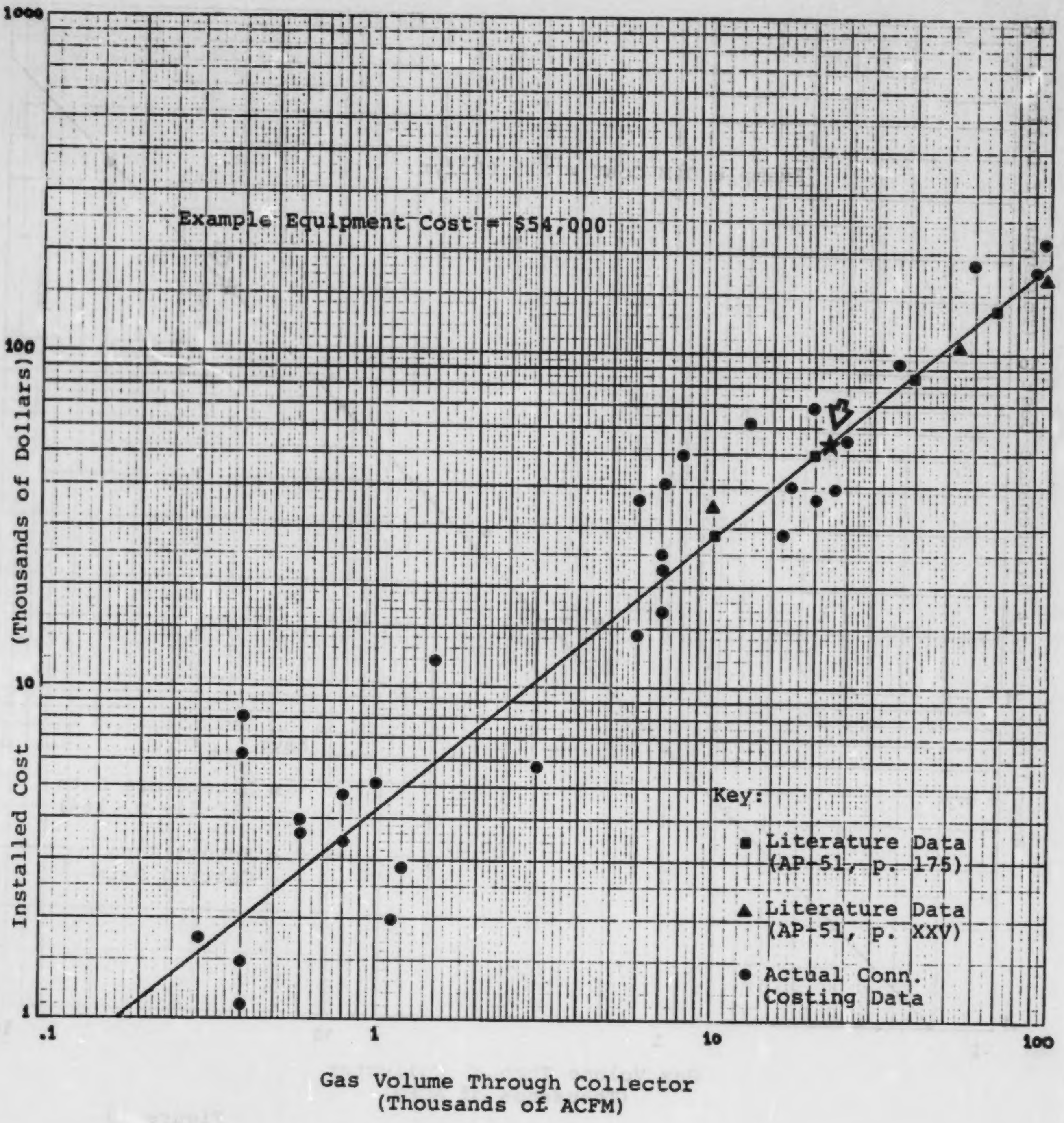

Figure 3

Annual Operating & Maintenance Cost Of Baghouses

-Particulate Control-

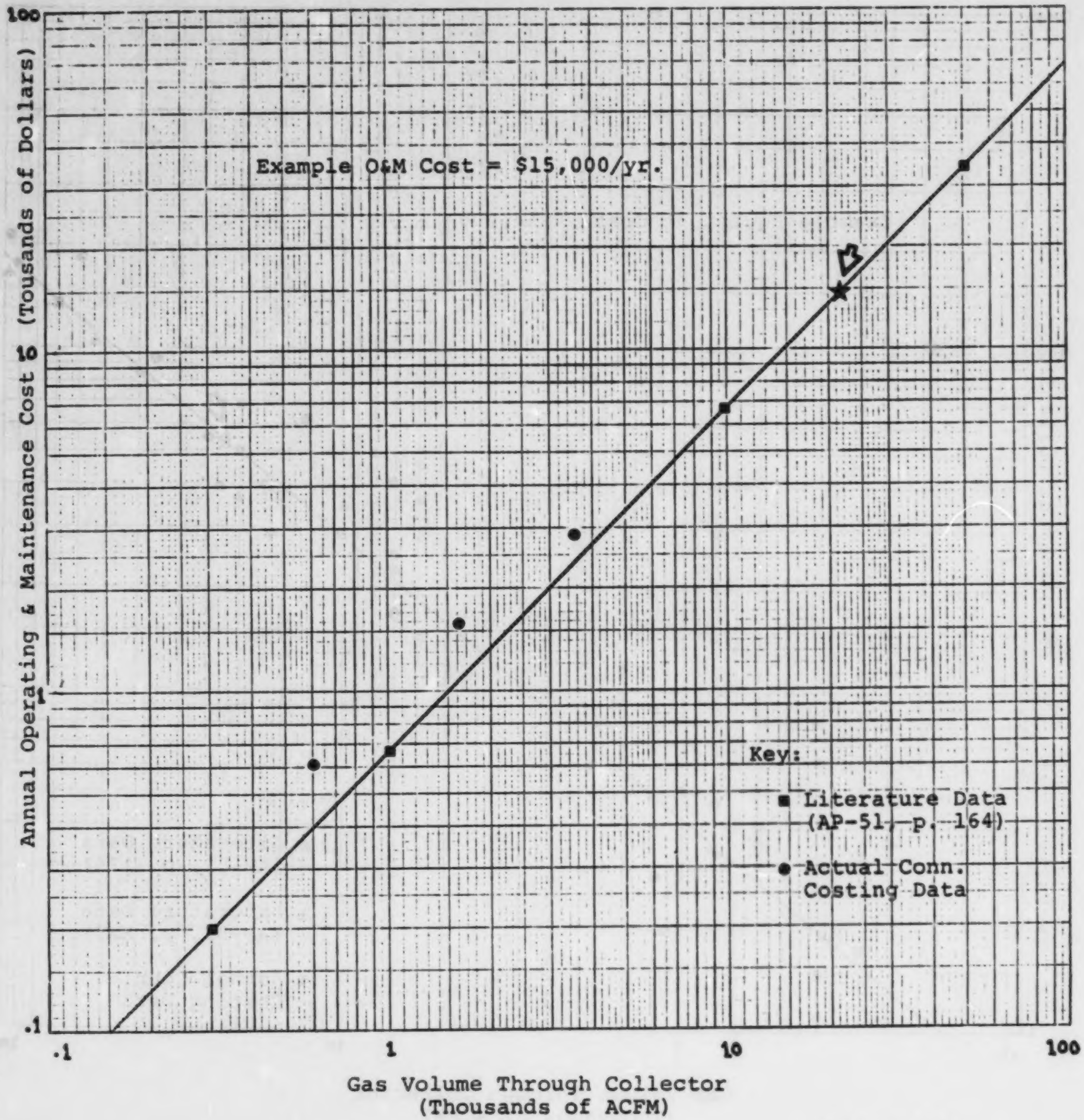

Figure 13

Since the gas volume flow rate to be controlled is 22,000 ACFM, the cost curves indicate the equipment costs for the baghouse are about $54,000 and that the annual operating costs are about $15,000.

ESTIMATING THE COSTS OF MONITORING COMPLIANCE

The Department is able to develop and use cost curves to estimate the cost of compliance with monitoring requirements much as it can use curves to estimate O&M compliance costs. The Department has found that the costs of monitoring operating parameters are fairly constant for any given set of parameters (gas pressure drop, water pressure, etc.), and do not vary much with changes in emission characteristics (e.g., gas flow, pollutant concentration) or source size. Opacity monitoring costs for particulates have also been generally constant, regardless of changes in these same two types of factors. Consequently, the Department has been able to simplify the job of estimating monitoring costs by using single, typical cost figures (instead of curves based on some technical variable such as gas flow). For example, to estimate the cost of an opacity monitor for an industrial boiler, all a Department enforcement engineer has to do in 98 percent of the cases is to look up the opacity monitoring cost table and read off the estimates written there. In the rare event that the monitor cannot be installed in the plant ductwork but must be placed in the stack instead, he will also have to estimate on a case-by-case basis the cost of installing the meter in the stack.

So far, the Department has developed cost estimates for monitoring (1) the opacity of emissions and (2) operating parameters for wet scrubbers. These estimates, together with an explanation of their derivation and testing, are explained in the Appendix to this Part.

Using Monitoring Cost Curves: An Example

Suppose an insurance company heats its offices using a boiler with a capacity of 25 million BTU per hour. Suppose further that the company is under an operation and maintenance permit but has not issued purchase orders for required opacity monitors by the deadline in its monitoring timetable. In order to estimate the costs of compliance, an enforcement officer can look at the permit, or if necessary visit the plant, to determine whether the monitor can be installed in ductwork or must be installed in the stack, and (assuming indoor installation is possible), turn to the appropriate cost estimates, reproduced below.

OPACITY MONITORING COSTS

Instrument	$1327
Indoor Installation	374
Operation & Maintenance	530

Assuming installation in existing ducting is possible, equipment costs for the opacity monitor are about $1327, indoor installation costs about $374, and annual operating costs about $530.

UPDATING THE CURVES

Equipment and operating costs are subject to change due to both inflation and technological advance. Accordingly, the Department must update the curves used for estimating the cost of compliance with O&M and monitoring requirements with current cost information from time to time. This data will come from actual Connecticut figures and from studies performed by the U. S. Environmental Protection Agency and others.

CHAPTER III

HANDLING INFLATION

Inflation affects both the purchase price of replacement equipment and annual operating and maintenance costs. Plant costs have increased almost 25 percent in 1972-74, for example, and operating and maintenance costs, which reflect chiefly labor and energy costs, have been even more volatile. Thus, projection of future compliance costs requires constant upward adjustment to reflect inflation.

INDEXING INFLATION

The economic assessment formula adjusts the estimated cost of compliance cash flow for inflation. All the Department need do is adjust the figure used as the assumed inflation (deflation) rate each year to reflect the average experience of the previous three years. A three-year rolling average is used to flatten out sudden sharp shifts in the rate both to reduce sudden shifts in assessment levels and because people making capital decisions similarly "smooth" fluctuations in their "inflation expectations."

The civil assessment regulations allow the Commissioner to peg the inflation rate used in the assessment calculus to whatever index or indices of price change he finds is most appropriate. The U. S. Bureau of Labor Statistics, although it compiles cost indices for hundreds of products and commodities, does not yet prepare a pollution control index.

The best available index is the CE Plant Cost Index published by the trade journal, Chemical Engineering. It contains four major components: (1) equipment, machinery, and supports, (2) construction labor, (3) building materials and labor, and (4) engineering supervision and manpower. This weighted index is generally accepted in the engineering profession as a highly accurate and reliable guide, and it is currently used by the U. S. Environmental Protection Agency to update Agency publications.

Using this index, the rate of inflation (RI) the Department would use in its economic assessment calculus throughout 1975 would be 7.9 percent.

CHAPTER IV

ADJUSTING FOR TAXES

Most regulatees that buy and operate pollution control equipment obtain various tax benefits which lower the cost of the investment. Equipment costs can be partially recouped through depreciation allowances, which permit especially accelerated depreciation for pollution control equipment. Operating and maintenance expenses are deductible as ordinary business expenses. Equipment investments are also eligible for an investment tax credit.

The civil assessment formula automatically takes these tax benefits into account. (Depreciation is figured on a straight-line basis over an accelerated depreciation period. The assessment formula also assumes a 48 percent income tax rate and a 10 percent investment tax credit.) These tax adjustments avoid what otherwise would be a large over-assessment in most cases, because they adjust the cost of compliance downward to reflect tax savings.

A 48 percent income tax rate is a workably accurate assumption for about 80 percent of the corporate regulatees. A few companies have lower tax rates. In addition, most individuals and partnerships are taxed at a lower rate; municipalities and non-profit institutions are not subject to tax at all. For these cases the Department will want to adjust the formula's tax assumption. Whether and how the Department adjusts for differences in individual regulatees' tax rates depends on whether it is dealing with a corporation, individual, partnership, or municipality.

Corporations

The Department will not have to worry about adjusting for individual income tax rates for most corporations. There are only three types of corporations that may have income tax rates below 48 percent: (1) companies operating at a loss, (2) companies with extraordinary tax deductions or credits even though they are operating profitably, and (3) very small companies.

Companies operating at a loss generally do not expect to continue profitless for long. When they eventually become profitable, they will be able to take advantage of the tax advantages that accumulated during the period when they were not profitable. Consequently, these companies will not alter very much their evaluation of what an abatement project will cost them. Moreover, their calculations take into account the after-tax costs of abatement well into the future, and the normal businessman is not likely to assume he will be operating continuously in the red for twenty years. In other words, the Department need not worry about adjusting the formula for companies operating temporarily at a loss.

Companies with low tax rates because of extensive deduction and credits other than for operating losses are a more serious problem. Special provisions in the tax laws, most notably depletion allowances that benefit companies involved in extractive activities, can largely or entirely eliminate income tax liability. U. S. Steel and Occidental Petroleum, for example, pay negligible income taxes because of the tax cover such provisions allow. Such companies will calculate their after tax costs of an abatement investment differently from most companies: they will perceive such investments to be significantly more costly than most companies. However, the situation is likely to be relatively rare, especially given recent Congressional action to reduce and eliminate the oil depletion allowance. Therefore, unless the Department is dealing with an extractive industry or an exceptionally difficult case, Department staff probably need not worry about such cases.

Very small companies will be taxed at significantly lower rates, because the tax on corporations is graduated. This year the rate is 20 percent for the first $25,000 of taxable income, 22 percent for the second $25,000 of taxable income, and 48 percent for taxable income in excess of $50,000. This schedule of rates is effective for 1975 only. If it is not extended or otherwise changed, the former schedule will apply. Those rates are 22 percent for the first $25,000, 26 percent for the second 25,000, and 48 percent thereafter. Where a corporation's taxable income is sufficiently low that its overall tax rate deviates substantially from 48 percent, the Department may well want to modify the formula's income tax rate assumptions to fit the specific facts of the case.

Individuals and Partnerships

When the Department is dealing with individuals or partnerships, it should initially assume a tax rate of 19 percent for individuals and 18 percent for partnerships, the averages for such persons. In addition, given the wide range of effective tax rates paid by such persons, the Department will want to adjust its tax assessment formula from case to case. How it can do so at low cost is outlined in the next main section below.

Municipalities and Non-Profit Institutions

Municipalities and non-profit institutions do not pay income tax and therefore derive no tax benefits from whatever capital or operating and maintenance expenses they incur in order to abate pollution. When dealing with such institutions, the Department should adjust its civil assessment formula to assume a zero tax rate.

DETERMINING INDIVIDUAL TAX RATES

When the Department decides it must determine individual tax rates in order to set civil assessments accurately, it can obtain this information in two relatively simple ways:

- It can ask the regulatee to submit (1) its most recent balance sheets and income statements if it is a business or (2) its most recent income tax statement if the regulatee is an individual. The civil assessment regulations specifically provide that the Department can require such information as it needs, specifically including financial information, from regulatees.

- For companies, especially publicly held companies, this information is a matter of public regard and may be found routinely in financial and investment publications such as Moody's Industrial Reports or Standard and Poors. These works are available in the Connecticut State Library and many others.

ADJUSTING THE FORMULA FOR CHANGES IN THE TAX LAWS

From time to time the provisions of the tax laws are changed. If, for example, the investment tax credit is increased from 10 to 12 percent, the provisions in the formula set at 10 percent should be increased accordingly.

CHAPTER V

USING THE COST OF CAPITAL

The Connecticut Enforcement Program attempts to put the regulatory agency into the shoes of the regulatee. Businessmen faced with environmental regulation focus immediately on the cost of raising and using money to meet environmental standards now and in the future. Similarly, economic civil assessments take the current and continuing costs of using money into account.

Once the cost of compliance cash flow (which describes the cash outlays that will be required in each year of a control program) has been established, the economic assessment calculus discounts it at the present average value cost of capital rate of the regulatee's industry. If the cost of capital is 10 percent, for example, expenditures of $1000 a year from now would be discounted to a $909 value.

Such discounting is necessary because the $1000 expenditure a year from now costs less than the same expenditure now. The reason is that the person who plans the expenditure could invest $909 now at 10 percent and in a year would have the necessary $1000. If the expenditure could be deferred longer, the amount needed now to invest for the expenditure would be even less. This amount is the present value of the future expense.

Businessmen evaluating the costs of different investment projects, including abatement projects, have to take the time value of money into account. They are keenly aware that $1000 spent three years in the future entails considerably less cost than $1000 spent now. They consider the total present value of a project as its immediate costs plus future costs, reduced by a discount factor equal to the time value of money.

USING THE COST OF CAPITAL

The cost of capital is the right discount factor to use in the economic assessment calculus because (1) it is the cost business must pay for its money and (2) it therefore represents a minimum rate of return businessmen must obtain on their investments. A business will be able to earn at least this rate of return on any resources available to it, which makes it the proper discount rate for bringing future costs to present value.

The cost of capital is also a good measure of the opportunity costs of investing in pollution control. Not only are the outlays required for such expenditures generally not recouped, but they usually generate no net income. In the meantime the regulatee must pay at its cost of capital rate to obtain the funds necessary for such expenditures (taking into account both debt and equity costs). By discounting both future expenses and possible future assessments at the cost of capital rate, economic remedies ensure that delinquent regulatees are charged for the full economic value of such delay. The resulting civil assessment offsets not only equipment and operating cost savings due to noncompliance but also the return on capital which would be made by investment of these savings in a profitable venture.

COMPONENTS OF THE COST OF CAPITAL

Since the cost of capital is the cost of raising or borrowing money, it is natural that different people and businesses have different costs of capital.

Industry-Wide Costs of Capital

For most businesses, the cost of capital is the weighted average of the costs of debt (e.g. bond issues or bank debt) and equity (e.g. sales of common stock). If a company's capital is 50 percent debt with a marginal cost of 10 percent and 50 percent equity with a current cost of 20 percent, the company's cost of capital will be 15 percent.

The civil assessment formula uses a marginal cost of capital rate. Thus, the low interest on bonds sold twenty or thirty years ago does not depress the rate so as to make it a misleading measure of the current cost of money to the regulatee. The marginal cost of capital rate also effectively reflects changes in the market price of money of all sorts. When interest rates go up (and common stock prices down), the marginal cost of capital will go up, accurately reflecting the increased cost a regulatee will have to pay for the resources required for the pollution control project.

Although the cost of capital is a key tool used all the time by businessmen and economists, it is hard to pin down exactly, especially on a company-by-company basis, chiefly because of the difficulty of measuring the cost of the equity component. If equity is based on book value, distortions are possible for a variety of accounting reasons, e.g. because assets purchased long ago that have appreciated substantially may still be valued at original cost. Using market value avoids this difficulty; in fact, the market adjusts equity values taking future as well as current value into account. However, market values (1) are not available for many potential regulatees, and (2) are subject to sharp swings not always entirely caused by facts relevant to the particular case. Consequently, litigation to determine an individual regulatee's cost of capital is almost always drawn out, expensive, and unhelpful.

Connecticut's CEP regulations avoid this quagmire entirely by using industry average cost of capital figures. This practice has several other, equally important advantages.

- The Department's staff will not have to gather financial data about each company and go through a series of financial calculations (with which most engineers are unfamiliar). Instead, the staff will only have to decide to which industry group the regulatee belongs and look up that industry's cost of capital on a one-page table maintained by the Department.
- The Department will not have to worry about adjusting for temporary changes in a company's condition.

Moreover, industry-wide data is an acceptably accurate substitute for individual cost of capital rates. The CEP calculated the cost of capital for a large number of Connecticut companies and found relatively small deviations from the industry average figures. The courts have long approved the use of industry average cost of capital figures in the regulation of individual companies.

The Department has now compiled industry-wide cost of capital averages for each of the industrial groupings in Connecticut. These averages were derived using the weighted cost of capital methodology outlined above, using data drawn from such readily available and reliable sources as Standard and Poors, Financial Dynamics, the Federal Trade Commission's Quarterly Reports of Financial Data for Manufacturing Companies, and the Internal Revenue Service's Corporation Income Tax Returns.

Municipal Costs of Capital

Like businesses, municipalities have a cost of capital. Since bond sales are usually the only source of raising capital for most cities, towns, and villages, the municipal cost of capital is usually equal to the bond rate which must be paid on newly issued municipal bonds. (While some economists believe that the governmental cost of capital should reflect the costs of taking money out of the private sector and thus should be equal at least to the average private sector cost of debt, this theory has not yet achieved general acceptance -- at least not in the governmental community.) Accordingly, the municipal cost of capital will be the most recent average municipal bond rate in Connecticut.

Individual Costs of Capital

Individuals too have costs of capital, most frequently the interest rate they must pay on money they borrow. Accordingly, in instances where civil assessments are to be imposed against individuals, the individual cost of capital will be the current typical interest rate on generally available personal loans.

CHAPTER VI

DETERMINING THE USEFUL LIFE OF EQUIPMENT

The useful life of equipment generally dictates how often the equipment should be replaced. This rate of replacement is important to a businessman trying to determine the cost of a long-term investment in pollution control, for it permits him to project future compliance expenses at regular intervals. After selecting a reasonable number of years for equipment life, the businessman projects a regular pattern of equipment purchases and discounts these future expenses to present value to determine the current worth of future expenses for equipment. (See Chapter V for a discussion of discounting to present value.)

The useful life of control equipment has a major effect on the present value of a long-term invesment in pollution control. For example, suppose the owner of an asphalt batching plant prices baghouses. He finds two on the market for $100,000 each, with the same operating costs, but one (baghouse A) has a useful life of eight years and the other (baghouse B) of twelve years. He will have to buy fewer B type baghouses over time. And future replacements will be less expensive in present value terms. If inflation is 10 percent and the owner must pay 15 percent interest to finance the purchase, he will quickly decide to invest in the second one: the present value of the first replacement of baghouse A is $70,074

$$(100{,}000 \times \left(\frac{1.10}{1.15}\right)^{8} = 100{,}000 \times .700743 = 70{,}074.3)$$

while that of baghouse B is $58,659.

$$(100{,}000 \times \left(\frac{1.10}{1.15}\right)^{12} = 100{,}000 \times .586594 = 58{,}659.4)$$

Future replacements will compare similarly in present value.

In the same way that a business investor would use useful life to help determine the present value of continuous investment in pollution control, the civil assessment formula anticipates regular replacement of control equipment as it wears out, and includes these replacement costs as part of the cost of compliance. The assessment regulations for operation and maintenance and for monitoring violations assume a ten year useful life for abatement equipment and monitoring equipment, subject to change if the Commissioner finds in any case that a different period is more appropriate. The ten year value is an average based on data from EPA cost studies and a Department survey of Connecticut industries. If U. S. Internal Revenue Service depreciation guides, manufacturers specifications, regulatee tax records, or similarly reliable evidence demonstrates that a different value is more accurate in any case, the Department can simply introduce the substitute value into the assessment calculation.

APPENDIX

DERIVING COST CURVES FOR MONITORS

The Department can use cost curves to estimate the cost of compliance with monitoring requirements. Using such curves instead of estimating costs on a case-by-case basis will reduce administrative costs without sacrificing accuracy. Comparative tests of the curve and case-by-case approach were carried out for estimating abatement costs. Using cost curves reduced the time necessary for the Department's enforcement engineers to estimate abatement costs in an average case from five hours to twenty minutes.* In each test, the accuracy of the estimate was within 20 percent of the actual cost of the equipment when it was installed on the source. Thus, cost curves can be a reliable, time-saving tool.

The Department has so far developed two sets of monitoring cost curves for the O&M enforcement program. One is for opacity monitors, and was developed using 1974-75 cost data taken from source registration statements. The other cost estimates are for monitors of three operating parameters for wet scrubbers -- water flow rate, water pressure, and air pressure drop. Since costs of installed monitoring systems of this type were not available, these estimates were derived from surveys of equipment vendors. These two sources of data -- actual Connecticut cases and vendor surveys -- together with monitoring cost information currently being developed by EPA,** should enable the Department to develop similar curves for other monitoring systems.

OPACITY MONITORS

Opacity monitors are by far the most widely used type of monitor in Connecticut. Approximately 1850 sources are required to have opacity monitors installed by early 1976, but virtually no sources are required to monitor other measurements of emissions or operating parameters. Moreover, some 20 percent of the Department's abatement orders are for opacity violations. As sources subject to orders achieve initial compliance, a similar portion of O & M enforcement cases can be expected to involve opacity violations. Thus, opacity monitoring has and will continue to have a significant role in the Department's O & M program.

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*See Volume II, Part V, Chapter VII (Determining the Cost of Compliance in Emissions Violation Cases).

**See, e.g., Memorandum on Emissions Monitoring Costs, EPA Office of Air Quality Planning and Standards, Feb. 27, 1975.

The Department has developed three cost curves for opacity monitors: (1) instrument costs, (2) indoor installation costs, and (3) operating and maintenance costs. Outdoor installation is not included because costs vary widely and will therefore have to be estimated case-by-case. Fortunately, the Department estimates that outdoor installation is required in only 1-2 percent of the cases. In most cases, a single typical cost can be used: $1327 for instrument costs, $374 for indoor installation, and $530 for O & M costs -- or $2231 altogether. This fact further simplifies cost estimating.

Instrument Costs

The typical cost for opacity monitoring instruments is $1327. This cost does not vary much with changes in the size of the facility. These results were derived using a linear regression program to correlate boiler size with instrument cost, calculated on a programmable computer. The sample contained sixty-two sources with installed opacity monitors, sources which had eighty-one monitors among them.

The cost curve correlating cost with facility size shows that instrument costs are not sensitive to changes in source size until sources become very large -- over 700 million BTUs per hour in the sample.*

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*The equation which describes the curve is

$$y = 1327.07 + .000002\,x,$$

where y = instrument costs
and x = boiler size.

The correlation coefficient, r, is .7954 and r^2 is .6327, indicating an acceptable correlation between the data. The standard error of estimate is 654.434. The table following the opacity monitor cost graph on the next page lists the names and locations of the sources in the sample.

Indoor Installation Costs

Indoor installation of the equipment will cost, on average, $374, roughly 25 percent of the cost of the equipment. However, in some cases these costs vary significantly. Installation can cost as little as 10 percent and as high as 90 percent of the cost of the equipment. How large the installation costs will be depends chiefly on how accessible or inaccessible a suitable location for the equipment is in the ductwork. Costs do not vary significantly with changes in either equipment costs or boiler size.

Despite this variation in unusual cases, the Department can rely on the $374 average cost figure without serious risk because (1) its estimates will not be seriously inaccurate in all but a few cases and (2) even then the error will not have a serious impact on overall estimates since this cost is only 16 percent of the total.

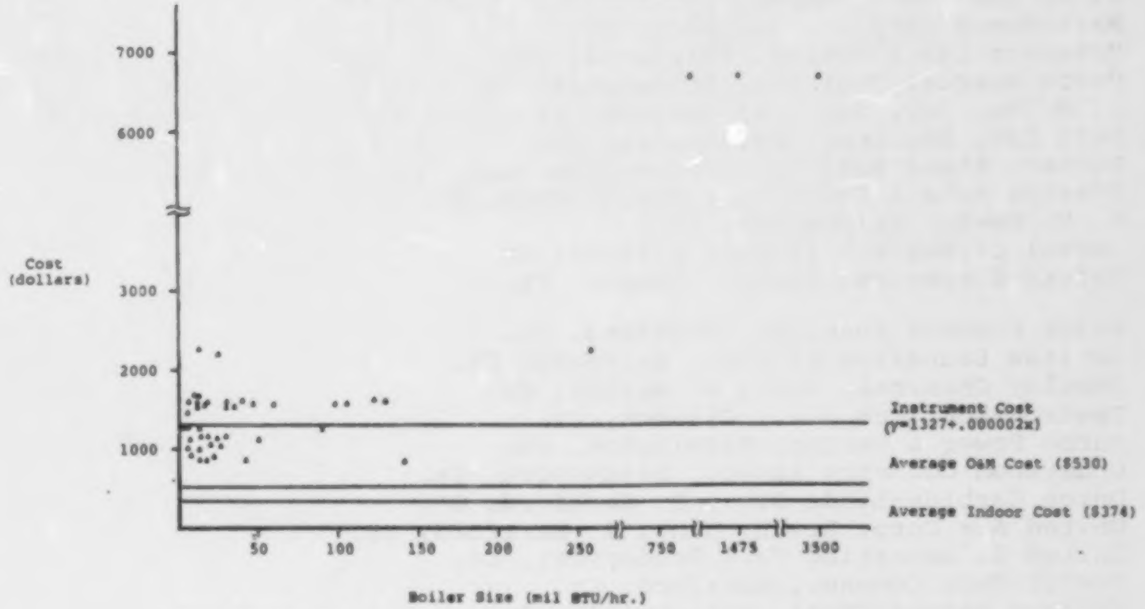
Operation and Maintenance Costs

The cost of operating and maintaining installed opacity monitoring equipment averages $530 per year.

This average is based on cost estimates provided by six of the seven vendors whose instruments appeared in the sample. They provided cost information for the major components of O&M expense: supplies, other routine servicing and maintenance expenses, and repairs.

OPACITY MONITORS:

INSTRUMENT, INSTALLATION AND O&M COSTS



Note: Plotted points represent instrument cost data.

SAMPLE OF SOURCES WITH INSTALLED OPACITY MONITORS

Aetna Insurance Co., Hartford, Ct.
American Fabrics, Bridgeport, Ct.
C. J. Bates and Son, Inc., Chester, Ct.
Bridgeport Hospital, Bridgeport, Ct.
Bryant Electric Co., Bridgeport, Ct.
Capewell Manufacturing, Hartford, Ct.
Carpenter Tech. Corp., Bridgeport, Ct.
Cello Products Company, E. Hartford, Ct.
Chas. W. House & Son, Inc., Unionville, Ct.
Columbia Magnetics, Danbury, Ct.
Danbury Hospital, Danbury, Ct.
Detroit Strip Detrt. Steel, Hamden, Ct.
E. E. Dickinson Co., Essex, Ct.
Dictaphone Corp., Bridgeport, Ct.

E. Hartford Hospital, E. Hartford, Ct.
Fabricated Product Div., Bloomfield, Ct.
Factory Insurance Assoc., Hartford, Ct.
Fairfield University, Fairfield, Ct.
GAF Corp., Glenville, Ct.
Greenwich Lodge, Greenwich, Ct.
Greenwich YMCA, Greenwich, Ct.
Greenwich Hospital, Greenwich, Ct.
High Standard Sport Arm., Hamden, Ct.
Holt Assoc. Inc., Hartford, Ct.
Industrial Laundry, Bridgeport, Ct.
H. A. Leed Co., Hamden, Ct.
Mark-Henry Corp., Bridgeport, Ct.
McKesson Laboratories, Fairfield, Ct.
Moore Special Tool Co., Bridgeport, Ct.
J. M. Ney Co., Inc., Bloomfield, Ct.
Park City Hospital, Bridgeport, Ct.
Pioneer Steel Ball Co., Unionville, Ct.
Plastic Wire & Cable Co., Jewitt City, Ct.
D. M. Reed, Bridgeport, Ct.
Russel Clymer Willis Co., Bristol, Ct.
Safety Electrical Equip., Hamden, Ct.

Saint Francis Hospital, Hartford, Ct.
Sanitas Laundries of N.E., Hartford, Ct.
Stanley Chemical, Inc., E. Berlin, Ct.
Textron-Bostitch Div., Clinton, Ct.
Turbo Power & Marine, Farmington, Ct.
Underwood Commerce Assoc., Bridgeport, Ct.
Union Carbide-Linde Div., E. Hartford, Ct.
United Air Corp. Resch. Lab., E. Hartford, Ct.
United Illuminating Co., Bridgeport, Ct.
Veeder-Root Company, Hartford, Ct.
Wallace Barnes Steel, Forestville, Ct.

PARAMETER MONITORS FOR SCRUBBERS

Wet scrubbers are the most widely used type of control equipment in Connecticut, constituting 42 percent of the control equipment installed as of April, 1975. Moreover, the Department estimates that the 486 scrubbers in use in the State generally have little excess cleaning capacity -- they must operate close to their designed maximum cleaning efficiency in order to prevent the source from exceeding emissions standards.* Any falloff in proper operation and maintenance could lower their effectiveness to the point of seriously risking emissions violations. Because of their widespread use and this generally close operating margin, the Department must give close attention to sources controlled by scrubbers. In all likelihood, a significant portion -- up to 50 percent -- of the Department's monitoring enforcement efforts in the future will be directed at scrubber monitoring.

To obtain useable monitoring data without imposing the high costs of emissions monitoring on regulatees, the Department has begun to develop a program to monitor control equipment performance by measuring the performance of select operating parameters. For wet scrubbers, the parameters are air pressure drop, water pressure, and water flow rate. By observing the performance of these parameters during emission tests which demonstrate compliance with emissions standards, the source managers and the Department can determine operating standards for a scrubber which will show whether it is being operated properly. Changes in these operating parameters directly affect scrubber effectiveness; improper operation of the scrubber is likely to cause change in at least one of the parameters. In addition, these parameters are easy to measure.

The first step in developing cost curves was to specify the range of parameter fluctuation a monitor would have to measure and the necessary accuracy of measurement. The Department developed the necessary ranges,shown below, from standard engineering literature.**

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*DEP Air Compliance Unit Memorandum, "Modification to the 100-Ton Test Program," April, 1975.

**See, e.g., EPA Air Pollution Control Manual, AP-40, 2d ed., pp. 101-107 (May 1973).

PERFORMANCE RANGES FOR SCRUBBER OPERATING PARAMETERS

TYPE OF SCRUBBER	WATER FLOW RATE (gpm/100 cfm)	WATER PRESSURE (psi)	DIFFERENTIAL AIR PRESSURE (in H_2O)
Spray Chamber	3 - 8	100 - 150	NA
Cyclone Type	4 - 10	100 - 150	2 - 8
Orifice Type	20	100 - 150	2 - 8
High Pressure	5 - 10	300 - 600	NA
Venturi	3	100 - 150	10 - 30

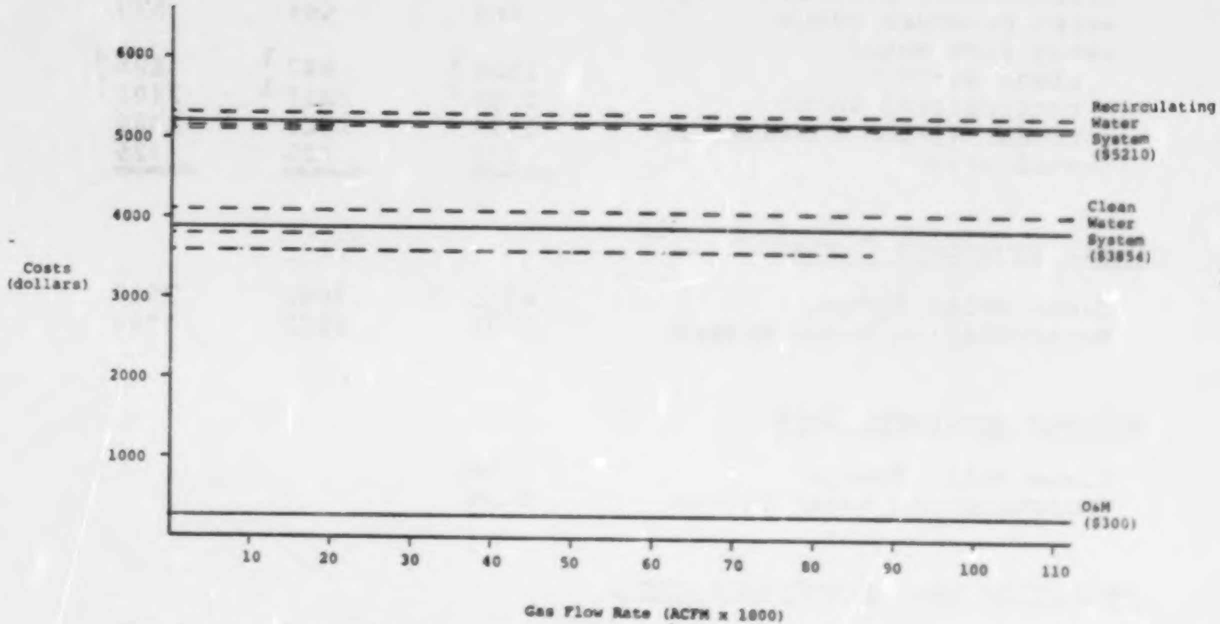
Vendor surveys revealed that monitors for these parameters are accurate to 1-2 percent of the actual condition being measured.

The second step was to canvass vendors to determine price ranges and major price variables of monitoring equipment. To develope these estimates, the Department contacted all six vendors who actively market in Connecticut meters to record air pressure drop, water pressure, and water flow rate; three responded. The vendors who responded reported generally fixed costs, producing cost curves which exhibit no significant change as the size of the source increases. The major variable for the equipment cost of the entire scrubber monitoring system -- differential air pressure gauge, water pressure gauge, water flow gauge, and recorder -- is the use of recirculating vs. clean water in the scrubber. (Recirculating the water to lower operating costs of the scrubber requires installation of additional equipment -- a magnetic tape converter -- to prevent abrasive particles in the water from damaging the flow meter.) This variable is also insensitive to source size; recirculating water in the scrubber requires a more expensive flow meter, but the same meter works regardless of source size.

The Department has developed equipment and operating cost estimates for parameter monitors for five types of scrubbers -- spray chamber, cyclone-type, orifice-type, high pressure spray, and venturi. Equipment costs vary slightly among these scrubbers, primarily because variation in water flow rates (3 gallons per minute (GPM), per 1000 cubic feet per minute of gas flow (CFM) for venturi scrubbers vs. 20 GPM/1000CFM for orifice type scrubbers) may dictate water flow meters with different capacities. Since the cost variation is slight, however (see Table 1, notes 2-5), a single curve is useable for all five types of scrubbers. The curve below reflects average equipment and O&M costs.

EQUIPMENT AND OPERATING COSTS

FOR SCRUBBER PARAMETER MONITORS



Legend: Dotted lines indicate vendor cost estimates

TABLE 1

COST SURVEY OF
MONITORING EQUIPMENT VENDORS [1]

EQUIPMENT COSTS	Fisher & Porter	Foxboro	Taylor Instr.
differential pressure gauge	$ 750	$ 725	$ 698
water pressure gauge	600	684	573
water flow meter			
clean water	1200 [2]	847 [3]	805 [4]
recirculated water	2300 [2]	2217 [3]	2402 [5]
recorder (3-pen continuous)	1300	1321	1386
installation	225	225	225
Total Equipment Costs			
Clean Water System	4075	3802	3687
Recirculating Water System	5175	5172	5284
Average Equipment Cost			
Clean Water System	3854		
Recirculating Water System	5210		
OPERATION AND MAINTENANCE COSTS			
supplies & utilities	75	75	75
recalibration & other labor	225	225	225
Total annual O&M costs	300	300	300
Average Annual O&M Cost	300		

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[1] The vendors contacted were Fisher & Porter Co., Foxboro, Inc., Taylor Instruments, Inc., BIF Corp., ACCO-Bristol Div., and Honeywell Corp. Only the first three responded.

[2] Meter flow capacity is 350 gallons per minute (GPM).

[3] Meter flow capacity is 60 GPM.

[4] Meter flow capacity is 255 GPM.

[5] Meter flow capacity is 700 GPM.

[redacted]

PART III

OPERATION AND MAINTENANCE REGULATIONS

NOTE

The CEP has proposed the following draft regulations to the Connecticut Department of Environmental Protection as the basis for an O&M enforcement program. The draft regulations were written to integrate with the Department's existing air pollution abatement regulations, §§ 19-508-1 et seq. of the Regulations of Connecticut State Agencies, and existing air pollution civil assessment regulations, §§ 22a-6b-602 et seq. They also were drafted so that the Department could adopt them pursuant to its existing statutory authority in Chapters 360 and 439 of the Connecticut General Statutes, as amended, and consistent with the Connecticut Administrative Procedures Act, §§ 4-169 et seq. These other regulations and statutes should be consulted as necessary.

OPERATION AND MAINTENANCE REGULATIONS:

SECTION 19-508-100 *et seq.*

Text of Regulation	Comments on Regulations
Section 1. The Regulations of Connecticut State Agencies are amended by adding Sections 19-508-100 to 19-508-105, inclusive, as follows:	Comment to Section 1 This is the enactment clause, following Connecticut administrative procedure.
Section 19-508-100. Title. Sections 19-508-100 to 19-508-105, inclusive, shall be known and may be cited as "Operation and Maintenance Regulations for the Abatement of Air Pollution."	
Section 19-508-101. Definitions.	
(a) Except as otherwise provided in this section, the definitions in Section 19-508-1 shall apply to the Operation and Maintenance Regulations for the Abatement of Air Pollution.	Comment to Section 101(a) Section 19-508-1 is the definition section of the Regulations for the Abatement of Air Pollution.
(b) "Abatement strategy" means any modification, reformulation or alteration of any process, including but not limited to a change in process rates, practices, materials, or equipment, to prevent or control the release of any air pollutant, or any air pollution control equipment.	Comment to Section 101(b) This definition covers all types of actions which may be taken to decrease air pollution. It therefore includes "air pollution control equipment," and the phrase "air pollution control equipment and other abatement strategies" as used in the regulations covers all types of control strategies. The difference between control equipment and other abatement strategies is important chiefly because of the distinction drawn in Section 19-508-102(a), below.
(c) "Air pollution control equipment" means any device which, as its primary function, decreases the discharge of any air pollutant by processing the effluent from a source.	

Text of Regulation

(d) "Emission" means the act of discharging air pollutants into the ambient air or releasing them from a source.

(e) "Emission standards" means the set of limitations established in Sections 19-508-9 and 19-508-18 to 19-508-22, inclusive, of the Regulations for the Abatement of Air Pollution on the discharging into the ambient air or the releasing from a source of air pollutants.

(f) "Emission test" means any testing method as set forth in Sections 19-508-5(a) to 19-508-5(d), inclusive or other testing method of equal or superior reliability approved by the Commissioner, for determining compliance with emissions standards.

(g) "Final Operation and Maintenance Permit" means a permit issued by the Commissioner pursuant to Section 19-508 and/or 22a-6 of the General Statutes, as amended, and to Section 19-508-105 of the Operation and Maintenance Regulations for the Abatement of Air Pollution, which has become final and effective as prescribed in Section 19-508-105(g). Any appeal shall stay the effectiveness and finality in its entirety of an otherwise final operation and maintenance permit until such appeal is withdrawn or is finally adjudicated, including adjudication of appeals from lower court decisions.

(h) "Final order" means an order of the Commissioner issued pursuant to Section 19-508, 19-510, 19-514, 19-515, 19-517 and/or 22a-6 of the General Statutes,

Comments on Regulations

Comment to Section 101(d)

This definition differs from the one in the abatement regulations in that it distinguishes "discharging" into the ambient air from "releasing" pollutants from a source, a distinction not present in the "emission" definition in the abatement regulation, but one which the enforcement staff has adopted administratively and wants to formalize.

Comment to Section 101(g)

The importance of deferring the effectiveness of an O&M permit arises from the violation "operating without an O&M permit" in Section 22a-6b-611. A source which operates without a final O&M permit is subject to civil assessments, notwithstanding the pendency of administrative adjudication or judicial review of an issued permit. Of course, the hearing officer or the court may stay the collection and/or the accumulation of the assessment during litigation. The last sentence is unnecessary but is included for informational value,

Comment to Section 101(h)

This definition of "final order" is slightly clearer than the definition in Section 22a-6b-602 (see Volume II, Part 4).

Text of Regulation	Comments on Regulations
as amended, which has become final by the consent of the regulatee, or his failure to file a timely answer, or has been issued after hearing.	
(i) "Malfunction" means any sudden and unavoidable failure of process, production, fuel burning, or incineration equipment or of air pollution control equipment or other abatement strategy to operate in a normal or usual manner. Failures that are caused in whole or in part by poor maintenance, careless operation or any other preventable upset conditions or breakdown shall not be considered malfunctions.	Comment to Section 101 (i) This definition is taken from EPA regulations; see Section 60.2(q) of part 60 of title 40, C.F.R.
(j) "Operation and Maintenance Standards" means operation and/or maintenance procedures, schedules, requirements or conditions for air pollution control equipment or other abatement strategies prescribed in Section 19-508-102, in a final order, or in a final operation and maintenance permit for the purpose of ensuring continued compliance with emissions standards.	Comment to Section 101(j) O&M standards are specific operating and maintenance standards described either in regulations or in orders or O&M permits.
(k) "Operation and maintenance timetable" means the date or series of dates of incremental steps in a final order or a final operation and maintenance permit by which a person is to come into compliance with operation and maintenance standards.	
(l) "Technical evaluation" means any method of testing or evaluation other than an emission test	Comment to Section 101(l) The "interim" nature of a technical evaluation (using emissions factors or other guides) is to eliminate or answer the argument by a regulatee that once

which the Commissioner deems sufficient to provide an interim determination of compliance with emissions standards.

Section 19-508-102. Operation and Maintenance Standards.

(a) General Standards

(a)(1) No person shall cause or permit the emission of any air pollutant in excess of emissions standards from any source which has air pollution control equipment as its primary abatement strategy and which the Department determines in writing after an emission test or a technical evaluation to have the ability, if properly operated and maintained, to meet such emissions standards.

any type of paper evaluation had been done and he had passed, he could not be required to perform an emission test since an adequate determination of compliance had already been made.

Comment to Section 102(a)(1)

The purposes of (a)(1) are (1) to use emissions standards as a measure of proper O&M, and (2) to provide a backhand defense for a controlled source to assert against the application of civil assessments for emissions violations (see Section 22a-6b-602), on the grounds that emissions violations by controlled sources should be treated differently than emissions violations by uncontrolled sources (to which 602 applies). The department is not prevented by either 602 or the O&M assessment regulations (611 to 614) from trying to use both; any attempt to do so would appear quite unreasonable, however. Similarly, an attempt to impose 602 assessments on controlled sources would appear unreasonable given the O&M violation described here.

An important definitional question is, what is a controlled source? Four choices exist:

(1) sources who installed control equipment pursuant to an order;

(2) sources who completed an acceptable abatement strategy, whether by control equipment or by process change, pursuant to an order;

(3) all controlled sources (whether ordered or self-controlled) who installed control equipment;

(4) all controlled sources with control equipment or other abatement strategies.

Among these choices, group (4) should be eliminated immediately, for it could become a loophole for 602 assessments (all sources would claim they had adopted "other abatement strategies").

(a)(1) applies to group (3) sources to the extent the department has satisfied itself that the installed control equipment enables the source to meet emissions standards.

The inclusion of group (2) within the scope of (a)(1) requires a weighing between conflicting policies: on one hand, sources which control their emissions other than through control equipment with the department's concurrence, and which expect to be able to meet emissions standards (based on emissions factors or stack tests) should not be treated as uncontrolled sources; on the other hand, group (2) sources have not made the control investments that sources which installed control equipment have, and should not have the (a)(1) defense available against a 602 assessment based on savings from deferred equipment purchase. The department chose to omit group (2) from the scope of (a)(1), in order to retain 602 leverage over these (a)(2) No person shall cause or permit the operation or maintenance of any air pollution control equipment or other abatement strategy, which is not governed by operation and maintenance standards in a final order or a final operation and maintenance permit, in a manner inconsistent with operations during the most recent emission test required to be performed, or approved in writing by the Department, which demonstrated compliance with emissions standards. However, operation or maintenance in a manner inconsistent with the operations during such emission test shall not constitute a violation if the source can demonstrate that the inconsistency produced the emission of air pollutants for which the test was conducted, at lower levels relative to emissions standards than emitted during such test.

sources if they violate emissions standards.

Group (1) is a subset of (3), and thus is within the scope of (a)(1).

Comment to Section 102(a)(2)

This paragraph establishes the O&M parameters of the most recent stack test as the O&M standards for that source where it is not already covered by O&M standards in a final order or final O&M permit. The second sentence establishes a defense to the O&M violation where operation in a manner inconsistant with stack test parameters would produce lower emissions levels.

The phrase "required to be performed or approved in writing by the Department" is intended to provide some quality control over stack tests whose test parameters are to be considered O&M standards. The quality control device is a two-edged sword: making it tight by restricting it to required tests means that regulatees who conduct tests voluntarily avoid having the test parameters established as binding O&M standards -- an incentive to regulatees to conduct tests voluntarily. On the other hand, eliminating the control device and establishing test parameters of unsupervised tests as O&M standards invites manipulation of the test (e.g., opening a bypass during the test). The Department requires Section 19-508-4 stack tests of major sources (78% of the state's 450 hundred tonners have been tested). Thus, the issue turns on how to handle other sources. The written approval standard is intended to enable the Department to establish decisively, on a case by case basis, whether test parameters of non-required tests are to be considered binding standards.

Text of Regulation	Comments on Regulations
(a)(3) Operation and maintenance of air pollution control equipment or other abatement strategy in a manner consistent with operation and maintenance standards shall not relieve any person of the responsibility to comply with emissions standards, unless the person can demonstrate that such operation and maintenance standards substantially prevented compliance with emissions standards, and the person notified the Commissioner of this conflict prior to the receipt of a notice based on the failure to meet emissions standards.	Comment to Section 102(a)(3) This paragraph is intended to make absolutely clear that emissions standards remain binding upon all sources even though they are under O&M standards which have been designed to ensure compliance with emissions standards. The only condition under which the regulatee is relieved of responsibility for not meeting emissions standards is where the O&M standards prevented compliance and the regulatee realized this and evidenced that realization by notifying the Commissioner of that fact. This defense and its restrictions give what fairness demands and at the same time do not provide a defense which every regulatee can use when found in violation. The regulatee, under the restrictions to the defense, must have taken some earlier action which gives the department an indication that he would have produced fewer emissions had the department not made a mistake in its standards.
(a)(4) During any period of malfunction of air pollution control equipment or other abatement strategy, no person shall cause or permit the operation or maintenance of such air pollution control equipment or other abatement strategy in a manner inconsistent with good air pollution control practice for minimizing the discharge of pollutants. The requirements of this subsection apply in addition to requirements set forth in Section 19-508-7.	Comment to Section 102(a)(4) This paragraph provides a general standard for proper O&M during equipment malfunction that does not in any way limit the vigorous enforcement powers available to the department under Section 19-508-7 of the abatement regulations.
(a)(5) Upon the third operation and maintenance violation by a source within a period of thirty-six (36) months, the Commissioner may conclude on the basis of the record of violation that the source constitutes an "unabated activity" as	Comment to Section 102(a)(5) The purpose of this paragraph is to allow the department to treat a repeated violator as if he were uncontrolled and make a civil assessment accordingly. The theory supporting such treatment is that the regulatee made a bad investment

defined in Section 22a-6b-602 and that the owner or operator has failed to make the control expenditures necessary to bring such activity into compliance, in spite of emission tests or technical evaluations which indicated that the source had the ability to comply with emissions standards. Nothing in this paragraph in any way restricts the Commissioner at the time of the first or any subsequent violation of emisssions or operation and maintenance standards from imposing such assessments or taking such other steps as he deems necessary to ensure immediate and continued compliance with all applicable standards.

Section 19-508-103. Monitoring and testing.

(a) General Provisions

(a)(1) For the purpose of determining if a person is in continuous compliance with emissions and operation and maintenance standards, the Commissioner may require that such person take steps to facilitate inspection of any source and related air pollution control strategies, conduct emission tests, and monitor and record operating and/or emissions data, including but not limited to the following specific steps:

(A) Submission of manufacturer's design and capability specifications and instructions for proper operation and maintenance of any production, process, fuel

decision which produces repeated violations. Given that situation, the department can conclude that even though the source is technically capable of meeting emissions standards, as a practical matter a new system of controls with new investment is required. Note that the repeat violation must occur on the same source, not by the same person. Given the theory of the violation, fairness requires this restriction.

Comment to Section 103

The provisions of this section for facilitation of inspection, monitoring and testing provide in general little in the way of new authority. Most of the requirements that the Commissioner may impose here are contained within general provisions elsewhere in the regulations, especially Sections 19-508-4 and 19-508-5 of the abatement regulations, and Section 19-508-104 and 19-508-105 of the O&M regulations. The primary function of the section is to make explicit the types of requirements the department may impose on a regulatee for the purpose of policing O&M. Generally speaking, the requirements which may be imposed under this section will not be enforced separately, but will be imposed at the same time and using the same mechanisms as are used to impose O&M standards in orders and O&M permits.

Text of Regulation	Comments on Regulations
burning, and incineration equipment and air pollution control equipment and other abatement strategies;	
(B) Installation of sampling ports of a size, number, and location as determined by the Commissioner;	
(C) Installation of breakable seals on all air pollution control equipment by-passes, variable speed motors, dampers and similar devices, the use or variation of which has been determined by the Commissioner to be inconsistent with operation and maintenance standards under normal conditions;	
(D) Installation of devices to monitor and record continuously operating levels of process, production, fuel burning, and incineration equipment and/or air pollution control equipment and other abatement strategies;	
(E) Installation of devices to monitor and record continuously opacity and emissions;	
(F) Maintenance of records and submission of reports of the composition and amount of	

such solvents, chemicals, fuels, and other components of production, fuel burning, incineration, air pollution control, or other processes as the Commissioner shall specifiy.

(a)(2) The Commissioner may establish performance specifications for monitoring and recording devices installed under these regulations. Such specifications may include, but are not limited to, requirements as to accuracy, durability, and security of both monitoring and recording devices.

(a)(3) Where breakable seals have been required, the person shall notify the Commissioner by certified mail within twenty-four (24) hours of the breaking of such seal.

(a)(4) Records and reports required by the Commissioner concerning air pollutants; fuels, solvents, chemicals and other materials; and operation and maintenance information shall be recorded, compiled, and submitted in units and on forms prescribed or furnished by the Commissioner. Such records and reports shall be signed or verified in writing by the corporate president, or vice president reporting directly to the president, or highest ranking corporate officer or managing official with offices located in the state, or by an equivalently responsible officer in the case of organizations other than corporations. Such signature shall constitute personal affirmation that such officer has exercised due diligence in verifying the accuracy of the record or report and that, to the best of his knowledge and belief, the record or report is true and complete, complying fully with applicable state requirements. Any person who signs or verifies a record or report containing false or misleading information or other claims shall be subject to criminal prosecution pursuant to Section 53a-157 of the General Statutes, as amended.

(a)(5) Emission tests to ensure compliance with operation and maintenance standards.

(A) If the Commissioner has reason to believe that any operation and maintenance standard is being violated, he may require such emission tests as he deems necessary to demonstrate compliance.

(B) Such test shall be conducted in a manner satisfactory to the Commissioner and shall be conducted at the expense of the owner or operator, and the Commissioner

Text of Regulation	Comments on Regulations
or his representative shall be entitled to be present to observe the tests, including on-site sampling, subsequent laboratory analysis, or any other related procedures.	
(C) As part of the test, the Commissioner may require the owner or operator to furnish detailed information concerning operating conditions and maintenance status under which the test will be conducted. This information may be verified by enforcement personnel as part of the testing procedures.	
(D) The Commissioner may specify the level of operation of any process, production, fuel burning, or incineration equipment at which the emission test will be conducted.	
(a)(6) Nothing in this section in any way diminishes the authority of the Commissioner to require source monitoring, record keeping, reporting or testing as prescribed in any other regulation.	

Section 19-508-104. Enforcement.

(a) Violations. No person shall violate or cause the violation of any applicable regulation.

(b) Remedies for violations.

(b)(1) The Commissioner shall designate employees of the Department to be known as enforcement personnel, who shall, acting with or without complaints, conduct investigations to determine compliance or non-compliance with Department regulations.

(b)(2) Whenever the enforcement personnel determine that an emissions standard or an operation and maintenance standard has been violated or there has been a failure to comply therewith, they may, in conjunction with or independent of an order issued pursuant to Section 19-508-12(b)(2), make and serve upon the person or persons responsible for the violation or failure a written order requiring the person or persons to take all necessary steps, on or before prescribed dates, to ensure immediate and continued compliance with emissions and operation and maintenance standards.

Comment to Section 104(a)

This section generally parallels the enforcement section in the abatement regulations, Section 19-508-12. 12(b)(2) is not included here because it is of a scope much broader than necessary for the O&M regulations.

Comment to Section 104(b)(2)

It may be helpful at this point to outline the four devices for imposing O&M standards and monitoring and testing (M&T) requirements on controlled sources:

(1) Regulations. Despite the length and complication of the rule making process, it deserves to be available as an option for two reasons: (a) once accomplished (including any

legal challenge) it settles once and for all the legality and appealability of specific O&M and/or M&T requirements; (b) EPA has and will require states to revise their SIPs to adopt federal O&M and/or M&T requirements. These future O&M standards can be added to Section 102; M&T standards can be added to Section 103; Sections 104 and 105 of these regulations and Sections 611 to 614 of the assessment regulations provide the tools for enforcement.

(2) Orders to individual sources triggered by emissions or O&M violations. This is the (b)(2) device, whose use automatically triggers the O&M permit requirement in 105(a). The primary advantage of this device is that it permits the department to impose specific O&M and M&T requirements on individual sources. Its chief disadvantages are (a) the need to detect an O&M violation in order to use it, which imposes both inflexibility and significant administrative costs on the program, and (b) the absence of a major assessment for a first O&M violation (because the department will not be able to prove how long the violation went on), which gives the department little leverage to induce regulatees to accept (b)(2) orders without appealing them. This latter problem is the genesis of the automatic permit requirement in Section 105.

(3) Orders to classes of sources triggered by findings of widespread improper O&M. The purpose of this device is to capture a chief advnatage of rule making (single appeal opportunity followed by finality of a standard) and somewhat more flexibility than (b)(2) provides. The regulation authorizes the department, upon finding a widespread risk of emissions violations among a group of controlled sources, to issue a classwide order imposing O&M and/or M&T requirements on a specifically defined class of sources according to pollutant, abatement strategy, O&M parameter, or other criterion. Once issued, the class order could be appealed by any member of the class, and the appeal would apply to the entire class. Thus, only one hearing would be necessary, although the order would be stayed for all sources in the

(b)(3) If the Commissioner finds that a class of sources with substantially similar processes and/or air pollution abatement strategies operate in a manner which significantly risks or is likely to cause emissions standards to be exceeded by the sources in the class, he may make and serve upon the persons who own or operate the sources in the class by certified mail to each such person, a written order defining the class and requiring each member of the class to take all necessary steps, on or before prescribed dates, to correct such operations to ensure continued compliance with emissions standards.

(b)(4) Unless the person or persons against whom an order has been served files, in accordance with the Rules of Practice of the Department, a written answer thereto with the Commissioner within thirty (30) days after the date of service of the order

class pending hearing. (Individual sources would nevertheless remain subject to violation triggered, (b)(2) orders). Once final, the class order would apply to all members of the class, and non-compliance would give rise to assessment liability under 611.

The chief problem underlying the class order is a legal one: whether the department has the authority to issue it and whether it is a regulation with a different label, and thus conflicts with the APA. A legal memorandum in the file addresses these issues.

(4) O&M permits. See comment to Section 105.

Comment to Section 104(b)(4)

This provision is similar to Section 19-508-12(b)(4) of the abatement and requests a hearing thereon, such order shall become final and effective. The answer shall contain a clear and concise statement of the reason or reasons, if any, that the order is claimed to be invalid or insufficient and/or the manner in which the persons filing the answer deem themselves aggrieved by the order. Upon receipt of the answer and request for a hearing, the Commissioner shall schedule the hearing as soon thereafter as is practical before himself, a Deputy Commissioner, or a duly appointed hearing officer. In the case of an order issued under paragraph (b)(3) of this subsection, the Commissioner shall give notice of the hearing to each person to whom the order was served, and the order shall not be final and effective as to any such person until the Commissioner issues a final decision under paragraph (b)(6). Any person designated as hearing officer shall not have participated in any way in the investigation or other preliminary proceedings preceding the issuance of the order. The hearing shall be open to the public and shall be conducted pursuant to Sections 4-177 to 4-184 of the General Statutes, as amended, and to the Rules of Practice of the Department. During the course of a hearing, the hearing officer may take appropriate measures to preserve the confidentiality of trade secrets, unless required to be made public by state or federal statute.

(b)(5) Any applicant who receives a notice that a permit has been denied, revoked, modified, or only conditionally approved may deem the notice a written order under paragraph (b)(2) and file a written answer and request for a hearing under paragraph (b)(4).

regulations, with appropriate revisions reflecting the effectiveness of the APA and adoption of the department's Rules of Practice.

Comment to Section 104 (b) (5)

This is identical to Section 12(b)(5) in the abatement regulations, except that the right to hearing is limited to applicants.

(b)(6) At the conclusion of the hearing and after reviewing the hearing record and the recommendation and report of the hearing officer, if any, the Commissioner shall determine, based on the record, whether such order or permit should be affirmed, modified, reversed or revoked, and shall issue a final decision accordingly and serve a copy on such person or persons by certified mail. Any information as to secret processes or methods shall be kept confidential, unless required to be made public by state or federal statute.

Section 19-508-105. Operation and maintenance permit.

(a) Permit requirement.

(a)(1) No person in receipt of a final order of the Commissioner establishing a violation of operation and maintenance standards shall operate the source or sources to which such final order applies after a period of ninety days from the effective date of such order without first obtaining a final operation and maintenance permit from the Commissioner. Such operation and maintenance permit shall contain reasonable requirements to ensure immediate and continued compliance with emissions and operation and maintenance standards.

Comment to Section 104 (b) (6)

This provision serves the same function as 12(b)(6) with somewhat simpler wording.

Comment to Section 105(a)

Name. This mechanism is called an O&M permit to distinguish it from a permit to operate. The major problem with developing it as part of the permit to operate process is that the latter permits have a series of requirements other than the control of emissions. A major problem occurs with "hot spots." In areas where the ambient air quality standards are being exceeded, a source cannot be permitted even if it controls emissions to the required levels under emissions standards. At the same time, the department needs to be able to place O&M requirements in a permit like device even under those circumstances. One way to distinguish the two mechanisms is to give them different names and develop them in separate sections, as is done here. An additional way is to make a specific disclaimer in the regulations, as subsection (k) provides.

Purpose. The origin of the permit device lies in a judgment that the department's enforcement leverage upon detecting an O&M violation is not likely to be strong enough to induce a source to accept an O&M order with enough teeth. Enough teeth means three types of requirements: (1) submission of O&M data (which may require a stack test) and/or proposed O&M and/or M&T requirements, (2) installation of sampling ports and/or continuous monitoring equipment, and (3) acceptance of surety liability and/or stipulations shifting burdens of proof and imposing evidentiary restrictions in future cases of improper O&M.

Without the permit device (and the backup assessment for operating without a permit), the department's only real leverage upon detecting an O&M violation is to force a stack test. It doesn't have assessment leverage because it probably cannot prove how long the violation occurred. The stack test isn't much leverage either because (a) a source can try to impeach the department's evidence of O&M violation (especially if the department is trying to show an emissions violation using parameter evidence) or to rebut the department's case with parameter evidence of its own (expert vs expert) without even worrying about stack tests, and (b) even if the source knows it's going to lose, with or without a stack test, no economic incentive exists (except legal fees) to discourage it from refusing to test and appealing an adverse final order: it gains delay at low cost. By creating potential substantial assessment liability, the O&M permit requirement provides the missing incentive.

Note that the permit requirement is NOT triggered by a 104(b)(4) order. The goal of the (b)(4) order is to enable the Department to impose O&M standards on small, clearly defined groups of sources without new regulations. This goal can be largely accomplished without the permit requirement, because the order process automatically avoids several of the major bottlenecks of rulemaking. The possibilities of hearing and appeal remain, but these

Text of Regulation

(a)(2) The Commissioner may in his discretion delay the beginning of this ninety day period until the scheduled date of completion of any step specified in a compliance timetable contained in such final order.

Comments on Regulations

should be acceptable costs because the order recipients are, after all, not violators. The Department gets what it needs from (b)(4) without imposing the costs of O&M permits on order recipients.

Legislative authority. The authority for these permitting provisions comes from Section 22a-6 as amended in 1973.

Comment to Section 105(a)(2)

For a source which accepts an O&M order and is making orderly progress on his timetables, the department may well want to hold off on a permit proceeding until the order process generates sufficient data to establish O&M standards, then simply issue a permit under 105(e) which embodies these standards and other terms in the order.

(b) Application. Application for an operation and maintenance permit shall be made by the owner or operator of the source on forms furnished or in a form prescribed by the Commissioner. The application shall include such information, to the extent not previously submitted, as the Commissioner deems necessary to enable him to determine reasonable conditions to ensure continued compliance by the person with emissions and operation and maintenance standards, including but not limited to:

(1) specific description of the status of compliance with the terms of the final order, including a separate declaration for each step of any compliance timetable stating whether compliance is on schedule or off schedule;

(2) manufacturer's design and capability specifications and detailed instructions for operation and maintenance of the source and related air pollution control equipment or other abatement strategies to ensure continued compliance with emissions and operation and maintenance standards;

Comment to Section 105(b)

These information requirements are drawn largely from requirements elsewhere in these regulations and the progress report regulations (Section 22a-6b-601; see Volume II, Part 4). The exception is paragraph (4), which provides the basis for requiring acceptance of surety liability and/or stipulations as to burdens of proof and evidence for future violations. The rationale for the requirements in (4) is that the O&M permittee has already violated O&M standards, and the department is therefore justified in seeking additional assurances that violations will not recur. The legislative authority is in Section 22a-6.

Text of Regulation	Comments on Regulations
(3) results of emissions tests and specification of operating conditions and maintenance status under which such tests were conducted;	
(4) evidence of financial or other binding assurances of continued future compliance with emissions and operation and maintenance standards.	
(c) Standards. The Commissioner shall grant an operation and maintenance permit if he finds, based on evidence submitted by the applicant or otherwise made part of the record, that:	
(1) the source can be operated in continued compliance with emissions standards;	
(2) specific operation and maintenance standards which will ensure continued compliance with emissions standards have been established or will be established in accordance with a specific timetable acceptable to the Commissioner; and	

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(3) specific monitoring devices which accurately measure and record emissions and/or operating parameters have been installed or will be installed in accordance with a specific timetable acceptable to the Commissioner.

(d) Conditions. The Commissioner may impose such terms and conditions he determines are necessary to ensure continued compliance with emissions and operating and maintenance standards, including but not limited to:

(1) timetables for the establishment of operation and maintenance standards and the installation of monitoring and recording devices;

(2) equipment modifications and installations as necessary to permit testing or sampling to determine compliance with emissions and operation and maintenance standards;

(3) financial or other binding assurances that the regulatee shall immediately and continuously comply with emissions standards, operation and maintenance standards, and the terms and conditions of the operation and maintenance permit.

Text of Regulation	Comments on Regulations
(e) Direct issuance. If the Commissioner determines that a person under a final order has complied with the terms of operation and maintenance and/or monitoring timetables in such order and otherwise meets the requirements of subsection (c) of this section, he may issue an operation and maintenance permit to such person, notwithstanding the absence of a formal permit application by such person.	Comment to Section 105(e) In cases where the requirements of an O&M permit simply substitute for those in an order, this section authorizes direct issuance of the permit without a formal permit application. It saves needless paperwork. It parallels a similar process for transforming water pollution abatement orders into NPDES permits. See Section 25-541(e), C.G.S.
(f) Hearing. Any person who receives an operation and maintenance permit and is aggrieved by its terms and conditions, or who is denied a permit, may deem the permit or denial a written order under Section 19-508-104(b)(2) and may obtain a hearing by filing a written answer and request for a hearing in accordance with Section 19-508-104(b)(4).	
(g) Effective date. An operation and maintenance permit shall be final and effective (1) thirty days after the date of receipt, unless a hearing is requested within this period under subsection (f), (2) fifteen days after the Commissioner issues a final decision following hearing, unless an appeal is filed within this period, (3) upon final adjudication of any appeal, including adjudication of appeals from lower court decisions, whichever is latest of the above three dates, or (4) upon acceptance by the permittee and waiver of hearing and appeal.	Comment to Section 105(g) This subsection postpones the effective date of the permit until it is finally adjudicated or accepted by the regulatee. Thus, operating without an O&M permit gives rise to assessment liability even during the pendency of hearings and appeals on permit conditions. Of course, a hearing officer or a court can stay the collection of this assessment during most cases, and the accumulation of assessment during especially close cases.
(h) Renewal. Operation and maintenance permits shall be renewed every three years, unless issued for a shorter time.	

Text of Regulation | **Comments on Regulations**

(1) Modification.

(1) A permittee may make application to the Commissioner for a modification of an operation and maintenance permit at any time after it becomes final and effective. This application shall contain a clear and concise statement of the change in conditions or circumstances which provide justification for such a modification. The Commissioner may in his discretion accept or deny this application and may hold such hearings as he determines will be of assistance in reaching a decision on the application. Hearings held under this subsection shall be conducted in accordance with Sections 4-177 to 4-184, inclusive, of the General Statutes and the Rules of Practice of the Department.

(2)(A) The Commissioner may modify an operation and maintenance permit if he determines that its terms and conditions are inadequate to ensure continued compliance with emissions and operation and maintenance standards. In that instance, he shall establish such new reasonable conditions as will accomplish compliance with such standards.

Text of Regulation

Comments on Regulations

(B) Notice of modification shall set forth the reasons for the action taken and shall be effective thirty (30) days after the date of service of the notice, unless a hearing is requested prior to the expiration of the thirty (30) day period.

(j) Suspension and revocation.

(j)(1) An operation and maintenance permit may be revoked for failure to comply with any of the terms or conditions contained therein.

(j)(2) Notice of suspension or revocation shall set forth the reasons for the intended action and shall be effective thirty (30) days after the date of service of the notice, unless a hearing is requested prior to the expiration of the thirty (30) day period.

(j)(3) Any person aggrieved by the notice of suspension or revocation may consider the notice a written order under Section 19-508-104(b)(2) and may obtain a hearing thereon by filing a written answer and request for a hearing in accordance with Section 19-508-104(b)(4). Filing of the answer and request for the hearing shall postpone the effective date of the notice until conclusion of hearing and issuance of the final decision of the Commissioner.

Text of Regulation

(k) Other regulations. Obtaining an operation and maintenance permit in no way satisfies any requirements Sections 19-508-2 and 19-508-3 may place on any person with respect to registration or permits to construct or to operate. Operation and maintenance requirements stand in addition to and do not replace or in any way modify other registration and permitting regulations.

Comments on Regulations

CIVIL ASSESSMENT REGULATIONS:

FAILURE TO OPERATE AND MAINTAIN PROPERTY

SECTION 22a-6b-611

Text of Regulation

Civil Assessment Regulations for Failure to Operate and Maintain Properly

Section 2. The Regulations of Connecticut State Agencies are amended by adding Sections 22a-6b-611 to 22a-6b-614, inclusive, as follows:

Section 22a-6b-611(a). Title. This section shall be known and may be cited as "Civil Penalty Regulations: Failure to Operate and Maintain Properly."

Section 22a-6b-611(b). Definitions.

(1) Except as otherwise provided in this subsection, the definitions in Section 22a-6b-602(b) shall apply to Sections 22a-6b-611 to 22a-6b-614, inclusive.

(2) "Abatement strategy" means any modification, reformulation, or alteration of any process, including but not limited to a change in process rates, practices, materials, or equipment, to prevent or control the release of any air pollutant, or any air pollution control equipment.

(3) "Air pollution control equipment" means any device which, as its primary function, decreases the discharge of any air pollutant by processing the effluent from a source.

Comments on Regulations

Comment to Section 611(a)

This set of civil assessment regulations is designed to cover failures to operate and maintain according to operation and maintenance standards in the O&M regulations, Sections 19-508-100 to 19-508-105 or in O&M orders and permits. They are not designed to cover failures to comply with other conditions of orders or permits which do not prescribe the actual operating levels of control equipment and abatement strategies. A major example of the type of conditions of orders or permits not covered is the monitoring order. Violation of monitoring requirements in regulations is covered by 613; violation of monitoring orders is covered by 614. 612 covers operating without an O&M permit.

Comment to Section 611(b)

Note that all the definitions for 611-614 are in 611(b). This is to avoid a multiplicity of separate, section-specific definitions. They are identical with the definitions of the same terms in Section 19-508-101.

(4) "Assessment period" means the period of time, expressed in months or fractions thereof, during which a person:

(A) has failed or continues to fail to take all the actions or to incur all the expenses necessary to ensure immediate and continued compliance with operation and maintenance standards, except the period during which such person is subject to and in compliance with (i) an operation and maintenance timetable, and (ii) if such person is also under a final operation and maintenance permit, all other terms and conditions of such permit;

(B) has failed or continues to fail to take all the actions or to incur all the expenses necessary to ensure immediate and continued compliance with monitoring standards, except the period during which such person is subject to and in compliance with a monitoring compliance timetable; and/or

(C) operates without an operation and maintenance permit;

(D) except it does not include any period before the effective dates of Sections 22a-6b-611 to 22a-6b-614, inclusive, respectively, or any period beginning more than two years before discovery of the violation.

Comment to Section 611(b)(4)

In order to avoid a confusing vocabulary ("monitoring assessment period," "O&M assessment period" etc.), this paragraph incorporates all meanings into one definition. The definition is structured so that its parts can be used conjunctively or disjunctively. Hopefully, the definition will permit the DEP and regulatees to talk about "assessment periods" without the need for a battery of qualifying adjectives.

Text of Regulation	Comments on Regulations
(5) "Civil penalties final order" means an order of the Commissioner issued pursuant to Sections 22a-6b-101, 22a-6b-602, 22a-6b-603, and/or 22a-6b-611 to 22a-6b-614, inclusive, of the Civil Penalty Regulations which has become final by the consent of the regulatee or his failure to file a timely answer, or has been issued after hearing.	
(6) "Cost of compliance" means the total net, after tax, estimated present value of the sum of all equipment costs, all operating costs, and all other costs and savings the regulatee should have experienced and will experience in order to come into and remain in compliance, including but not limited to inflation, depreciation, such replacement costs as will be necessary to replace capital equipment that has worn out or become obsolete, and a discount rate equal to the cost of capital. For the purposes of Sections 22a-6b-612, 22a-6b-613, and 22a-6b-614, the "cost of compliance" may also mean a total net, after tax, estimated present value based on monitoring equipment costs and monitoring operating costs instead of equipment costs and operating costs, respectively.	Comment to Section 611(b)(6) The intent of this definition is to define cost of compliance as the sum of all (and only all) costs of proper O&M and/or monitoring. A corollary intent is to exclude any cost figure which represents less than all costs, in order to foreclose the possibility of having to calculate costs of partial improper O&M. See also the Comment to Section 611(e)(1).
(7) "Depreciable life" means the time period of useful life expectancy for capital plant and equipment. This period shall be defined as five (5) years until and unless the Commissioner finds otherwise pursuant to Section 22a-6b-611(g)(2), 22a-6b-612(g)(2), 22a-6b-613(g)(2) or 22a-6b-614(g)(2), in which case he may consider the depreciation periods allowed for tax purposes by the U. S. Internal Revenue Service and such other guides as he determines are similarly reliable.	

Text of Regulation

(8) "Equipment costs" means the installed capital costs of all equipment that was, is, and may continue to be required to bring the emissions from a source into compliance and to ensure continuous compliance with emissions standards. Such costs shall include, but are not limited to, the cost of equipment required to control emissions effectively, auxilliary equipment, technical and engineering services, and all other development and start-up costs including labor, materials and necessary testing. For the purpose of estimating equipment costs, the Commissioner may assume that (A) the most environmentally effective and reliable equipment of the type required was, is, and will continue to be used, and (B) all such equipment has been and will have to be replaced together, at a constant frequency, with the length of each cycle equal to the equipment life.

(9) "Failure to monitor" means the ownership or operation by any person of any process or piece of property, real or personal, which emits or causes to be emitted any air pollutant and is not equipped or is operated without the monitoring controls required by a monitoring standard. Ownership or operation of each such process or piece of property is a separate failure to monitor regardless of the number of identical or closely similar processes or pieces of property owned by the same person or located on the same premises.

(10) "Failure to operate and maintain properly" means the ownership or operation by any person of air pollution control equipment or other abatement strategy in a manner inconsistent with operation and maintenance standards.

Comments on Regulations

Comment to Section 611(b)(8)

Only sources which have a demonstrated ability to meet emissions standards are capable of violating O&M standards. (Other sources are covered by 602/603.) Thus, equipment costs are costs borne in the past, and the definition reflects this backward look. Phrase (B) enables the Department to assume that the entire control system is replaced every depreciable life (usually 10 years), instead of having to estimate the costs of separate equipment components that are replaced with varying frequency.

Comment to Section 611(b)(9)

The last sentence of both the "Failure to..." definitions is intended, like the definition of "Unabated activity" from which it was borrowed, to have the effect of raising the maximum penalties available by defining each violation on each different piece of equipment as a separate "Failure..."

Comment to Section 611(b)(10)

O&M standards include the requirements in §19-508-102, together with specific parametric standards written into O&M orders and permits. Thus, "failure to operate and maintain properly" includes violating parameter requirements in permits and orders, as well as in regulations.

Ownership or operation of each such equipment or other abatement strategy in such a manner is a separate "failure to operate and maintain properly" regardless of the number of identical or closely similar processes or pieces of property owned by the same person or located on the same premises.

(11) "Final order" means an order of the Commissioner issued pursuant to Sections 19-508, 19-510, 19-514, 19-515, 19-517 and/or 22a-6 of the General Statutes, as amended, which has become final by the consent of the regulatee or his failure to file a timely answer, or has been issued after hearing.

(12) "Final Operation and Maintenance Permit" means a permit issued by the Commissioner pursuant to Section 19-508 and/or 22a-6 of the General Statutes, as amended, and to Section 19-508-105 of the Operation and Maintenance Regulations for the Abatement of Air Pollution, which has become final and effective as prescribed in Section 19-508-105(g). Any appeal shall stay the effectiveness and finality in its entirety of an otherwise final operation and maintenance permit until such appeal is withdrawn or is finally adjudicated, including adjudication of appeals from lower court decisions.

(13) "Monitoring compliance timetable" means the date or series of dates of incremental steps in a final order or a final operation and maintenance permit by which a person is to come into compliance with monitoring standards.

Comment to Section 611(b)(12)

The definition defers the effectiveness of an O&M permit until it is final, including all appeals. Thus, a regulatee who appeals one condition of an O&M permit would still be "operating without an O&M permit" and subject to 612 assessments. See also definition (19).

Comment to Section 611(b)(13)

The "timetable" definitions are used as a shorthand way to identify separate components of orders and permits, since future orders and permits may include abatement requirements, O&M requirements, and monitoring requirements. See also 611(b)(18).

(14) "Monitoring Equipment costs" means the installed capital costs of such equipment as is or may be required to bring a failure to monitor into compliance with applicable monitoring standards. Such costs shall include, but not be limited to, the cost of equipment required to monitor emissions or operating parameters effectively, auxilliary equipment, technical and engineering services, and all development and start-up costs including labor, materials and necessary testing. For the purpose of estimating the cost of compliance prior to the date that the failure to monitor has been brought into compliance with applicable monitoring standards, the Commissioner may assume that what he finds to be the most environmentally effective and reliable equipment available will be used.

(15) "Monitoring standard" means any requirement set forth in Section 19-508-4 or 19-508-103, or prescribed pursuant to either section in a final order or a final operation and maintenance permit.

(16) "Monitoring Operating costs" means the non-depreciable annual costs for the operation and maintenance of equipment and processes required to monitor emissions or operating parameters which will protect installed monitoring equipment and ensure continuous compliance with applicable monitoring standards.

(17) "Operation and maintenance standards" means operation and/or maintenance procedures,

schedules, requirements or conditions for air pollution control equipment and other abatement strategies prescribed in Section 19-508-102, in a final order, or in a final operation and maintenance permit for the purpose of ensuring continued compliance with emissions standards.

(18) "Operation and maintenance timetable" means the date or series of dates of incremental steps in a final order or a final operation and maintenance permit by which a person is to come into compliance with operation and maintenance standards.

(19) "Operating without an operation and maintenance permit" means the operation by any person of any source (A) without a final operation and maintenance permit required by Section 19-508-105 after issuance of a final order by the Commissioner establishing a violation of operation and maintenance standards, or (B) during any period of suspension or revocation of a final operation and maintenance permit. Such operation constitutes operating without an O&M permit notwithstanding the pendency of any hearing or appeal concerning such permit, except that the regulatee shall be entitled to mitigation under Section 22a-6b-612(g)(3) or to correction under Section 22a-6b-612(g)(2), as applicable, of assessments made for such operation.

(20) "Regulatee" means a person who owns, operates, or maintains a source (A) which has been, is, or may become an unabated activity, or (B) in a manner which has constituted or may in the

Comment to Section 611(b)(20)

This definition captures both the 602/603 use of the term, as well as the O&M use. Eventually, 602(b) should be changed also.

future constitute a failure to operate and maintain properly or a failure to monitor.

(21) "Scheduled deadline" means the date in a monitoring compliance timetable or an operation and maintenance timetable by which a compliance measure is scheduled to be completed; such deadline may be for any of the intermediate steps in such timetable or for the final step at which compliance is to be completed.

Section 22a-6b-611(c). Civil Assessments for Failure to Operate and Maintain Properly. Any person who fails to operate and maintain properly or fails to comply with an operation and maintenance timetable shall be liable for a civil assessment by the Commissioner pursuant to Sections 22a-6b(2)(a)(2) or 22a-6b(2)(a)(3) of the General Statutes, as amended, and in accordance with the procedures prescribed in Section 22a-6b-100 to 22a-6b-102, inclusive of the Civil Penalty Regulations.

Section 22a-6b-611(d). Schedule of Maximum Assessments.

(1) Any person subject to an assessment under Section 22a-6b-611(c) may be assessed an amount for each failure to operate and maintain properly or failure to comply with an operation and maintenance timetable no larger than the product of (A) the monthly amount listed in the following schedule for the combination of equipment costs and operating costs which would be incurred to

Comment to Section 611(c)

Reference to both (a)(2) and (a)(3) is necessary because O&M requirements will exist in regulations and in orders and permits.

Comment to Section 611(d)(1)

Equipment costs and operating costs in phrase (A) are tied to compliance with emissions standards because these costs represent the expenditures necessary for continuous emissions compliance, hence proper O&M. They also constitute the basis for the amounts in the schedule. The terms are used consistent with the definitions in paragraphs 611(b)(8) and 602(b)(14).

Text of Regulation	Comments on Regulations
ensure continued compliance with emissions and operation and maintenance standards and (B) the number of months and/or fractions thereof the Commissioner determines are in the assessment period.	
(2) The maximum monthly amounts set forth in this schedule represent the economic advantages a person responsible for a failure to operate and maintain properly could gain from one month's noncompliance with operation and maintenance standards, assuming operating, economic and tax conditions all tending to increase the value to the regulatee of such failure. These maximum amounts have been calculated in three broad steps: a gross cash flow for each set of compliance expenditures, chiefly equipment costs and operating costs, is defined; this gross cash flow is discounted to present value; and the maximum monthly assessment is calculated as the amount which would, if paid monthly, amortize the gross present value of continued compliance. The Appendix to this section explains these calculations.	
(3) The Commissioner shall impose lesser assessments pursuant to Section 22a-6b-611(e)(1) if he finds the cost of compliance is less than indicated in this schedule, and he may further lower these assessments pursuant to Sections 22a-6b-611(e)(3) and/or 22a-6b-611(g).	
(4) In no case shall the assessment exceed $25,000 plus $1000 for each day that the failure to operate and maintain properly continues after the regulatee has received a civil penalties final order.	

SCHEDULE OF MAXIMUM ALLOWABLE MONTHLY CIVIL ASSESSMENTS

FOR A FAILURE TO OPERATE AND MAINTAIN PROPERLY

OPERATING COSTS	EQUIPMENT COSTS													
	$0-2500	$2501-5000	$5001-10,000	$10,001-20,000	$20,001-35,000	$35,001-50,000	$50,000-70,000	$70,001-100,000	$100,001-150,000	$150,001-200,000	$200,001-300,000	$300,001-500,000	$500,001-1,000,000	$1,000,000 and above
$0-1000	334	431	686	1156	1861	2566	3506	4916	7266	9616	14316	23715	47214+	*
$1001-2500	658	776	1010	1480	2185	2890	3830	5240	7590	9940	14640	24040	47539+	*
$2501-5000	1199	1316	1551	2021	2726	3431	4371	5781	8131	10481	15181	24580	48079+	*
$5001-7500	1739	1857	2092	2562	3267	3971	4911	6321	8671	11021	15721	25121	48620+	*
$7501-10,000	2280	2397	2632	3102	3807	4512	5452	6862	9212	11562	16262	25661	49160+	*
$10,001-15,000	3361	3478	3713	4183	4888	5593	6533	7943	10293	12643	17343	26742	50241+	*
$15,001-20,000	4442	4559	4794	5264	5969	6674	7614	9024	11374	13724	18424	27823	51322+	*
$20,001-25,000	5523	5640	5875	6345	7050	7755	8695	10105	12455	14805	19505	28904+	52404+	*
$25,001-35,000	7685	7802	8037	8507	9212	9917	10857	12267	14617	16967	21667	31066+	54566+	*
$35,001-50,000	10928	11045	11280	11750	12455	13160	14100	15510	17860	20210	24910	34310+	*	*
$50,001-75,000	16333	16451	16686	17156	17861	18566	19506	20915	23265	25615	30315+	39715+	*	*
$75,001-100,00	21738	21856	22091	22561	23266	23971	24911	26321	28671+	31021+	35720+	45120+	*	*
$100,001-200,00	43359+	43477+	43712+	44182+	44887+	45592+	46532+	47942+	50291+	52641+	*	*	*	*
$200,000 and above	*	*	*	*	*	*	*	*	*	*	*	*	*	

* No more than $25,000 plus $1000 for each day that the unabated activity continues after the regulatee has received a civil penalties final order.

+ Once the $25,000 element of the maximum is used up, the maximum monthly charge will be $1000 times the number ofdays in the month.

Comment to Schedule of Maxima

The Equipment Cost figure contributes a present value of all future equipment replacements (since a source which fails to operate control equipment indefinitely defers its replacement). The Operating Costs figure contributes a present value of O&M costs.

(5) The Commissioner has determined that the maximum remedies provided in this schedule will ensure immediate and continued compliance and will protect (A) the public health, safety, and welfare; (B) the public trust in the air, water, land and other natural resources of the state; and (C) the reasonable use of property.

Section 22a-6b-611(e). Determination of the Amount in Individual Cases.

(1) The Commissioner shall determine the amount of the monthly civil assessment he may levy for each individual failure to operate and maintain properly based on the total required cost of compliance, without regard to expenditures for partial compliance. Individual assessments are calculated in four broad steps: the gross cash flow of the required compliance expenditures, chiefly equipment costs and operating costs, is determined; the net cash flow is established by taking tax and other savings into account; this net cash flow is discounted to present value; and the individual monthly assessment is calculated as the amount which would, if paid monthly, amortize the net present value of continued compliance.

Comment to Section 611(e)(1)

The problem of assessing for partial compliance arises here, and requires explanation of the problem and some alternative approaches.

Cases will arise in which a regulatee who violates O&M standards will claim his noncompliance was only partial, i.e., that he took some but not all of the actions and made many but not all the expenditures necessary for continued compliance. A regulatee who makes this claim is likely to offer to prove it (by offering the testimony of plant engineers, purchasing agents, personnel managers, etc.) and to seek an assessment based on the difference between what he should have spent and what he claims he spent. The problem is that the Department may have very little way to verify important portions of this evidence at all or without great expense. This is especially true of labor costs: the plant engineer will testify that all the necessary people were on the job at all times and the personnel manager will corroborate this with personnel records and will establish costs with wage information. The Department has no effective way to verify whether these labor resources were actually allocated to O&M or elsewhere.

One way to avoid this problem is to calculate assessments solely on the basis

(2) The Appendix to this section explains these calculations. The Commissioner shall provide a written summary of the calculations used to determine a particular assessment, except to the extent he is required to maintain the confidentiality of certain information pursuant to Section 22a-6b-611(h), upon written request by an interested party or the affected regulatee.

of total compliance costs over the entire assessment period, i.e., to refuse to take any account of and give any credit for expenditures for partial compliance. A consequence of this approach is that a regulatee could be over assessed significantly. For example, a regulatee whose pressure drop is a little low for his scrubber or whose ductwork shows signs of poor maintenance would be over assessed if the assessment were based on the full cost of compliance.

In an attempt to strike some balance between creating a loophole and prescribing over assessment, the regulations provide in (e)(1) that initial assessment is to be based on the total cost of compliance, subject to discretionary mitigation under (g)(2) if the Commissioner finds that the regulatee took action and made expenditures specifically to comply with O&M standards during the assessment period. While not entirely satisfactory because it does not really solve the verification problem, the provision flags an evidentiary opportunity for the regulatee without binding the Department to accept a claim it cannot check.

Text of Regulation	Comments on Regulations
(3) In setting a civil assessment in a particular case, the Commissioner shall consider all factors which he deems relevant, including but not limited to those listed below; and he may, as a result of considering and balancing these factors, lower the civil assessment. The factors he shall consider include:	Comment to Section 611(e)(3) This provision repeats the statute.
(A) The amount of the assessment necessary to ensure immediate and continued compliance;	
(B) The character and degree of impact the failure to operate and maintain properly has on the public trust in the air, water, and land and on the natural resources of the state, especially any rare or unique natural phenomena;	
(C) The character and degree of injury to, or interference with, public health, safety or welfare which is caused or threatened to be caused by the failure to operate and maintain properly;	
(D) The conduct of the person incurring the civil assessment in taking all feasible steps or procedures necessary or appropriate to comply or to correct the failure to operate and maintain properly;	
(E) Any prior violations by such person of statutes, regulations, orders or permits administered, adopted or issued by the Commissioner;	

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(F) The economic and financial conditions of such person;

(G) The character and degree of injury to, or interference with reasonable use of property which is caused or threatened to be caused by such failure to operate and maintain properly.

(4) The Commissioner shall calculate the total civil assessment by multiplying the monthly civil assessment by the number of months or fractions thereof in the assessment period.

(5) In no case shall an individual assessment exceed either (A) the maximum civil assessment Section 22a-6b-611(d) would allow per month for a failure to operate and maintain properly with the same equipment costs and operating costs, or (B) for the total civil assessment due during the entire assessment period, $25,000 plus $1000 for each day that the failure to operate and maintain properly continues after the regulatee has received a civil penalties final order.

Section 22a-6b-611(f). Enforcement Proceedings.

(1) Hearings.

Text of Regulation	Comments on Regulations
(A) Any person in receipt of a notice issued pursuant to Section 22a-6b-101(a) of the Civil Penalty Regulations may apply to the Commissioner for a hearing pursuant to Section 22a-6b-101(b).	
(B) Such hearing shall be conducted by the Commissioner, a Deputy Commissioner, or a hearing officer duly appointed by the Commissioner or a Deputy Commissioner. Such hearing shall be conducted pursuant to Sections 4-177 to 4-184 of the General Statutes, as amended, and to the Rules of Practice of the Department.	
(C) The Department shall have the burden of producing evidence to prove the basis for imposing the assessment and the reasonableness of the proposed assessment, and the risk of non-persuasion by a preponderance of the evidence shall fall upon the Department.	Comment to 611(f)(C) This sub-paragraph restates the burdens on the Department's enforcement staff as the "moving party." Of course, factual findings by the Commissioner after hearing are entitled to judicial deference under the Connecticut APA.
(D) If the Commissioner, Deputy Commissioner, or hearing officer presiding at the hearing determines that information important to an accurate determination of all or part of the civil assessment amount is not available at the time of the hearing but will become available later, he may defer determining the amount of the civil assessment due until	Comment to 611(f)(D) The deferred hearing will be of far less value for O&M violations than for emissions violations. The control equipment or other strategy will already have been installed or adopted, hence its costs already known.

Text of Regulation	Comments on Regulations
he establishes that the previously missing information is available, at which time he shall promptly hold a hearing regarding the amount of the assessment due. He may not collect any portion of the civil assessment until this hearing is held and a civil assessment final order issued.	
(2) Appeals. Any person may appeal a civil penalties final order of the Commissioner issued after a hearing, pursuant to Section 22a-6b(f) of the General Statutes, as amended.	
Section 22a-6b-611(g). Mitigation.	
(1) General. The Commissioner may mitigate any civil assessment upon such terms as he in his discretion deems proper or necessary upon consideration of the factors set forth in Section 22a-6b(2)(b) of the General Statutes, as amended.	Comment to Section 611(g)(1) This paragraph repeats the statute.
(2) Mitigation for partial compliance. If the Commissioner finds that the regulatee has taken action and incurred expenses specifically to comply with operation and maintenance standards throughout the assessment period or during any parts thereof, he may in his discretion mitigate the assessment to reflect such expenses.	Comment to Section 611(g)(2) See Comment to Section 611(e)(1).

(3) Correction of assessment.

(A) A regulatee in receipt of a civil penalties final order may petition the Commissioner for correction of the assessment against him at any time between the date of the civil penalties final order and six months after the Commissioner finds that the regulatee has come into compliance. Such petition shall set forth in writing any evidence that the total required cost of compliance, without regard to expenditures for partial compliance, and/or the assessment period has been or will be less than the Commissioner had initially determined in calculating the assessment, and it shall be sent by certified mail or personal service to the Commissioner or the Director of Air Compliance.

(B) The Commissioner may, in response to such petition or at his own initiative, lower an assessment if he determines that the evidence in the petition establishes that the total required costs of compliance on which the monthly assessment was based and/or the assessment period used to calculate the total assessment was excessive. If the Commissioner takes no action in response to such a petition, or if his response is not satisfactory to the regulatee, the regulatee may obtain a hearing of right once it has come into compliance or at any other time specified in a final order or a civil penalty final order. Following such a hearing the Commissioner shall mitigate the civil

Comment to Section 611(g)(3)

The purpose of "correction", as opposed to the burden on the Department in the original hearing to establish the "reasonableness" of any assessment, is an automatic taking into account of evidence developed by actual events that costs of compliance were less than the projections upon which the assessment was based. Since O&M assessments of the 611/612 type are almost exclusively backward looking and costs should be as correctly known at the time of the hearing on the reasonableness of the assessment as they are later, correction should not be a frequently used proceeding.

The two types of situations for which correction may be useful are (1) if proper O&M requires some new equipment whose costs are better known after it is purchased, and (2) adjustment to the assessment period.

Text of Regulation

assessment if and to the extent that the total required costs of compliance, without regard to expenditures for partial compliance, have been less than he had initially determined, and/or the regulatee has come into compliance with less delay than the delay for which assessments have previously been made.

(C) Refunds shall be made with interest calculated from the time of payment and at the cost of capital rate used to determine the assessment.

(4) Reduction of the Assessment Period for Delays Beyond the Regulatee's Control. The Commissioner shall exclude from the assessment period such periods of noncompliance as the regulatee proves have been caused by strikes or lockouts; riots, wars, or other acts of violence; floods, hurricanes, or other Acts of God; or other equally severe, unforeseeable and uncorrectible accidents; where such acts or events were occasioned directly upon the regulatee or a person under contract to the regulatee. In addition, the Commissioner shall exclude from the assessment period such periods of noncompliance as were occasioned by delays attributable to the Air Compliance Unit of the Department in excess of reasonable processing times. Nothing in this section shall prohibit a regulatee from proposing, or the Department from accepting, a compliance timetable which excludes from the assessment period periods of noncompliance caused by other acts or events beyond the control of the regulatee, such as contractors' or suppliers' delays.

Comments on Regulations

Comment to Section 611(g)(4)

The force majeure provision excuses delinquency for acts and events beyond the regulatee's control which are independently verifiable. Market dislocations (except strikes and lockouts) do not trigger the force majeure provision, but any regulatee who anticipates supply problems may negotiate with the Department in advance for broader protection.

(5) Notice of Lowering or Mitigation.

(A) The Commissioner shall report every case in which he lowers a civil assessment pursuant to Section 22a-6b-611(e)(3) or in which he mitigates a civil assessment pursuant to Section 22a-6b-611(g)(1-4), if the monthly civil assessment without such lowering or mitigation would be greater than three hundred dollars. This report shall state the name and address of the regulatee, the amount of the reduction, the amount of the civil assessment still to be imposed, and the grounds for such lowering or mitigation.

(B) The Commissioner shall also send written notice of any hearings to be held regarding cases where the amount of the civil assessment may be an issue, at least ten days prior to the hearings, to all persons who have within the preceding twelve months requested copies of such reports.

Section 22a-6b-611(h). Request for Information by the Commissioner.

(1) The Commissioner may require the regulatee to provide such additional information, including information regarding costs, as he deems necessary to effectuate the purposes of Section 22a-6b-611.

(2) Any person who files any statement, record or report with the Commissioner containing false or misleading information or other claims will be liable to criminal prosecution for a Class A misdemeanor punishable by imprisonment for a period up to one year and a fine of up to one thousand dollars ($1000) for each violation pursuant to Section 53a-157 of the General Statutes.

(3) Any information disclosing trade secrets and commercial or financial information provided by a regulatee pursuant to this section will remain confidential if the regulatee so requests in a letter sent by certified mail or personal service to the Commissioner or the Director of Air Compliance, except that such information may be disclosed to other officers, employees, or authorized representatives of the state or federal government concerned with carrying out these regulations or when relevant in any hearing conducted under the authority of these regulations by the Department of Environmental Protection, subject to such safeguards as the hearing officer may impose, and such information shall be disclosed when required by applicable state or federal statute.

Section 22a-6b-611(i). Collection.

Comment to Section 611(h)(3)

The confidentiality provision is, of course, subject to override by state and federal right to know laws, as the last phrase states.

Text of Regulation	Comments on Regulations
(1) Payment of the civil assessment levied under this section may be required monthly, or at such time or time intervals as the Commissioner determines will most effectively limit the Department's administrative costs and further the objectives defined in Section 22a-6b-611(d).	
(2) The present value of the total civil assessment imposed, calculated at the time the notice of violation is issued, shall be held constant regardless of the timing of its collection.	

ECONOMIC APPENDIX
TO
SECTION 22a-6b-611

The Department of Environmental Protection Civil Penalty Regulations for Failure to Operate and Maintain Properly, Operating Without an Operation and Maintenance Permit, Failure to Monitor, and Violation of a Monitoring Timetable remove the financial benefit of improper operation and maintenance of air pollution control equipment. The regulations provide for assessments equal in value to the benefits of improper operation and maintenance and/or improper monitoring of equipment performance. These assessments are calculated using a capital budgeting formula, a relatively simple economic calculus commonly used by businessmen to evaluate investment alternatives. Assessments are designed to influence patterns of O&M expenditure by assuring a return on proper O&M equal to the return available on a commercially attractive alternative project. A source which properly operates and maintains its control equipment achieves this return by avoiding an assessment which matches its expected return on other expenditures.

This appendix explains the economic formula used to calculate civil assessments under §§22a-6b-611 to 22a-6b-614, inclusive, of the Civil Penalty Regulations. The explanation and examples all refer to assessments for improper operation and maintenance, and use cost figures which represent equipment and operating costs for air pollution control equipment. Assessments based on monitoring costs are calculated in exactly the same manner. The only differences between the two types of assessments are the equipment and operating costs figures used to generate them (i.e., whether abatement costs or monitoring costs are used), and possibly the depreciable life of the equipment involved.

ASSESSMENTS FOR IMPROPER OPERATION AND MAINTENANCE

A source which has already invested in air pollution control equipment but decides not to operate it saves

- the operating cost of the existing equipment and of all future replacements;
- the equipment cost of all future replacements;
- the remaining useful life of the installed equipment.

The civil assessment for improper operation and maintenance quantifies these savings into payments which, if made monthly throughout a specified assessment period, would have the same net economic impact on the source as the expenditures necessary for proper operation and maintenance throughout the same assessment period. In short, the assessment would equal the average value over the assessment period of the net cash flow generated by continued proper operation and maintenance of control equipment.

CALCULATING ASSESSMENTS

The schedule of maximum assessments for failure to operate and maintain properly in §22a-6b-611(d) is calculated in three broad steps:

(1) A gross cash flow is specified of expenditures in each year which would be necessary for continued proper operation and maintenance, and replacement of installed control equipment. These expenditures are operating costs and equipment costs; the latter includes cost of future replacements and the undepreciated value of installed equipment.

(2) This cash flow is converted to a present value by discounting at a rate equal to the average cost of capital for the industrial class of which the source is a member;

(3) A monthly amount is calculated which amortizes the present value of continuous proper operation and maintenance over an assessment period.

To calculate assessments in individual cases, the gross cash flow described in step (1) is reduced to a net cash flow based on expected savings from federal income taxes. The net cash flow is discounted to present value and amortized as in steps (2) and (3). In other words, the maximum assessments assume a zero income tax rate and no investment tax credit (a situation in which some corporations and all governments find themselves). Actual assessments reflect tax deductions and credits for which the source is eligible, and are therefore usually lower.

METHODOLOGY

COMPONENTS OF CASH FLOW

Costs of operation include operating and maintenance costs to ensure effective and dependable operation of the pollution abatement equipment.

Costs of equipment include:

(1) Capital costs for initial replacement control equipment, considered as an expenditure at time zero, the time of detecting the violation;

(2) Capital costs of replacement control equipment at the end of each period of expected life within the assessment period;

(3) A credit for the salvage value of equipment which is not fully depreciated at the end of the assessment period. The value of any undepreciated equipment existing in year zero is included in the credit for salvage value.

Reductions on U. S. income tax include:

(1) An investment tax credit for the purchase of new equipment;

(2) The ability to deduct from taxable income in each year

  (a) depreciation on the capital cost of equipment over its useful life, and

  (b) annual costs of operation.

ASSUMPTIONS

The schedule of maximum assessments reflects the following assumptions:

(1) For purposes of discounting, operating costs are considered to be paid and corresponding tax savings realized at the beginning of each year. Tax savings from depreciation are realized at the end of each year.

(2) Investment tax credit, if any, is obtained at the time equipment is purchased.

(3) If equipment is not fully depreciated at the end of the assessment period, it can be sold at a salvage value equal to its economic worth. (The formula for salvage value is given in the derivations section).

(4) Straight-line depreciation is used.

NOTATION

Input variables:

AP = Assessment period in years.

CC = Annual cost of capital or discount rate, as a decimal fraction.

CCE = Capital cost of initial replacement equipment in year of detection, in dollars.

EL = Expected life of equipment, in years.

DL = Depreciable life of equipment, in years.

OP = Operating costs in year of detection, in dollars.

RI = Annual rate of inflation, as a decimal fraction.

T = Effective marginal U.S. income tax rate in the year preceding detection, including tax credits which can be carried over (other than investment credit), as a decimal fraction.

TC = Investment tax credit, as a decimal fraction.

Output variable:

CA = Civil assessment per month, in dollars.

Other variables:

PVO = Net present value of operating costs over assessment period, net of any tax savings arising from operating costs.

PVIE = Net present value of initial replacement equipment, net of any tax credits and savings arising from the purchase and depreciation of this equipment.

PVE = Net present value of equipment cost over entire assessment period. (Includes discounted value of initial replacement and future replacement equipment, less the value of tax credits and deductions and of any salvage value at the end of the assessment period.)

A = Amortization factor, giving the amount of monthly payment required per dollar of present value to be amortized.

FORMULA

The civil assessment is given by formula (1) below, with the additional variables defined by equations (2) through (5). (These formulae are derived in the following section.)

$$CA = (PVO + PVE)\ A \tag{1}$$

$$PVO = (1-T) \left(\frac{1 + CC}{CC - RI}\right)\left(1 - \left(\frac{1 + RI}{1 + CC}\right)^{AP}\right) OP \tag{2}$$

$$PVIE = \left[(1-TC) - \frac{T}{(DL)(CC)}\left(1 - \frac{1}{(1 + CC)^{DL}}\right)\right] CCE \tag{3}$$

$$PVE = \left[\frac{1 - \left(\frac{1 + RI}{1 + CC}\right)^{AP}}{1 - \left(\frac{1 + RI}{1 + CC}\right)^{EL}}\right] PVIE \tag{4}$$

$$A = \frac{(1 + CC)^{(1/12)} - 1}{1 - \frac{1}{(1 + CC)^{AP}}} \tag{5}$$

DERIVATIONS

PVO:

Operating costs are assumed to be paid in the beginning of the year. Each year operation costs increase by an inflation factor of (1 + RI), regardless of the age of equipment then in use. Operating costs for year I are brought to present value by discounting by the factor $1/ (I + CC).^{I-1}$ There is a tax savings of T of operating costs each year, so net operating costs are the proportion (1-T) of gross operating costs each year. Thus,

$$PVO = \sum_{I = 1}^{AP} (1 - T)\ (OP)\ (1 + RI)^{I-1}\ \frac{1}{(1 + CC)^{I-1}}$$

Formula (2) above is an equivalent but explicit formula, derived from the sum of a geometric series.

PVIE:

The initial replacement equipment costs CCE. Deducted from this is a tax credit of TC x CCE obtained immediately, and tax savings of T of allowable depreciation for each year of depreciable life of the equipment. Using straight-line depreciation, annual depreciation is CCE/DL. Depreciation in year I is discounted by the factor $1/\ (1 + CC)^{I}$.

Thus, $$PVIE = CCE - (TC)\ (CCE) - \sum_{I=1}^{DL} (T) \left(\frac{CCE}{DL}\right) \frac{1}{(1 + CC)^{I}}$$

Formula (3) above is equivalent.

PVE:

The equipment cost of the K^{th} set of replacement equipment (where K=0 for initial replacement equipment) is equal to the purchase price of the initial replacement equipment times a cumulative inflation factor of $(1 + RI)^{K \times EL}$. The savings due to the tax credit on future replacement equipment and to deductions for depreciation are proportional to initial replacement equipment cost, and are thus also inflated by the same factor. Note that all expenditures and savings on this piece of future replacement equipment occur K x EL years further in the future than the corresponding cash flows for the initial replacement equipment purchase. Provided that the entire useful life of the K^{th} replacement equipment lies within the assessment period, its contribution to present value is

$$\left(\frac{1 + RI}{1 + CC}\right)^{(EL)(K)} \quad (PVIE)$$

If the assessment period AP is an integral multiple of the equipment life EL, then the useful life of all replacement equipment will be within the assessment period. In that case

$$PVE = \sum_{K = 0}^{(AP/EL)\ -1} \left(\frac{1 + RI}{1 + CC}\right)^{(EL)(K)} \quad (PVIE)$$

Formula (4) is equivalent but simpler.

If AP is not an integral multiple of EL, then the last piece of replacement equipment still has a salvage value at the end of the assessment period. The salvage value is assumed equal to the economic value of the equipment, which is the present value of remaining "services" of this equipment plus the tax saving from any remaining allowable depreciation. If the equipment was purchased in year J and has a remaining lifetime of I years (where I is less than EL), its salvage value is

$$CCE\ (1 + RI)^{J} \left[\left(\frac{1- \left(\frac{1 + RI}{1 + CC}\right)^{I}}{1- \left(\frac{1 + RI}{1 + CC}\right)^{EL}} \right) \quad (1-TC) + \frac{I}{EL} \quad (TC) \right]$$

This salvage value is such that the net present value of equipment costs over any period does not depend on what combination of new and used equipment is owned during that period. As a result, equation (4) for PVE holds regardless of whether AP is an integral multiple of EL.

A:

The amortization factor is based on a standard formula. It is the same formula as that for an annuity whose present value is one (1). Since the formula is for monthly payments, the numerator in equation (5) is the monthly cost of capital.

ASSUMED VALUES FOR MAXIMUM ASSESSMENTS

The schedule of maximum assessments assumes the following values. (Note that CA increases with increases in CCE, OP, RI, CC, DL and AP, and decreases with increases in EL, T, and TC).

RI = .15 (i.e., 15%)

While the rate of inflation over the past three decades has generally been under 5%, it has been increasing in the last few years and is currently around 12%. As there are not yet any firm indications that inflation has been brought under control, the estimate allows for some further modest increase.

CC = .20 (i.e., 20%)

Generally, over the long run, the cost of capital has exceeded the inflation rate by about 5% to provide an adequate return and to compensate investors for inflation.

T = 0

A few large, diversified corporations pay no U. S. corporate income tax and thus do not realize savings on these taxes. Moreover, government and other public or private non-profit agencies pay no income tax.

TC = 0

The investment tax credit changes frequently and may be eliminated entirely. Assuming a zero value reflects this possibility and avoids frequent changes in the schedule of maxima.

In addition, public and private non-profit agencies obtain no cost savings from any tax credit since they pay no income tax.

AP = 20 years.

This period was chosen because it is a common time frame for evaluating many capital projects. In order to assure fairness and comparability in assessing compliance costs in companies with different expected equipment lives, a common assessment period is necessary for computing all assessments.

EL = 5 years.

This life is the shortest typically encountered for air pollution control and monitoring equipment.

DL = 5 years.

Federal Tax law permits that pollution abatement equipment be depreciated over a five year period, or over the expected lifetime of the equipment, whichever is shorter.

CCE, OP = maximum of range.

To obtain the maximum assessment when CCE and OP may assume any value over a specified range, CCE and OP are set to the upper limits of their respective ranges.

AN EXAMPLE: DERIVATION OF A MAXIMUM ASSESSMENT

The following computations illustrate the calculation of the civil assessment for the upper left cell in the schedule of maxima, i.e., cost of equipment, CCE = \$2500 and annual operating cost, OP = \$1000. Other input variables are set at the values specified above.

$$PVO = 1 \left(\frac{1 + .20}{.20 - .15}\right) \left(1 - \left(\frac{1 + .15}{1 + .20}\right)^{20}\right) 1000 = 13{,}754.26 \qquad \left[\text{by } (2)\right]$$

$$PVIE = \left[1 - \frac{0}{5(.20)} \left(1 - \frac{1}{(1 + .20)^{5}}\right)\right] 2500 = 2500 \qquad \left[\text{by } (3)\right]$$

$$PVE = \left[\frac{1 - \left(\frac{1 + .15}{1 + .20}\right)^{20}}{1 - \left(\frac{1 + .15}{1 + .20}\right)^{5}}\right] (2500.00) = 7474.60 \qquad \left[\text{by } (4)\right]$$

$$A = \frac{(1 + .20)^{(1/12)} - 1}{1 - \frac{1}{(1+20)^{20}}} = .015719 \qquad \left[\text{by } (5)\right]$$

$$CA = (13754.26 + 7474.60)\ .015719 = 333.70 \qquad \left[\text{by } (1)\right]$$

For this example, the maximum civil assessment would be $333.70 for each month in which the regulatee failed to comply with operating and maintenance standards.

INDIVIDUAL ASSESSMENTS

For the purpose of calculating assessments in individual cases, the Department will use current, real values for RI, CC, EL, DL, T, TC, CCE, and OP.

(1) Rate of inflation will be valued as an average of recent annual rates based on an appropriate price index.

(2) Cost of capital will be valued as an industry-wide average, based on weighted costs of capital using the latest data from standard financial reports (FTC Quarterly Reports, Standard and Poor's, etc.) and industry groups from Standard Industrial Classifications.

(3) Equipment life will be valued according to the federal Environmental Protection Agency's data on the expected lives of pollution control and monitoring equipment, supplemented in part by Department surveys.

(4) Depreciable life is 5 years unless Federal Tax law changes or unless the Commissioner determines that the lifetime of a particular piece of equipment (and therefore its depreciable life) is less than five years.

(5) Tax rate will be valued initially at 48% for corporations and other business entities, unless the Department has reason to believe a lower rate is justified, and 0% for tax-exempt agencies.

(6) Tax credit will be valued at 10% for taxpayers, 0% for tax-exempt regulatees.

(7) Equipment costs and operating costs will be valued according to the extensive cost of compliance data compiled by EPA, supplemented by cost surveys conducted by DEP.

CIVIL ASSESSMENT REGULATIONS:

OPERATING WITHOUT AN O & M PERMIT

SECTION 22a-6b-612

Text of Regulation

Civil Assessment Regulations for Operating Without an O&M Permit

Section 22a-6b-612(a). Title. This section shall be known and may be cited as "Civil Penalty Regulations: Operating Without an Operation and Maintenance Permit."

Section 22a-6b-612(b). Definitions. The definitions in Section 22a-6b-611(b) shall apply to this section.

Section 22a-6b-612(c). Assessment for Operating Without an Operation and Maintenance Permit. Any person who operates without an operation and maintenance permit shall be liable to a civil assessment by the Commissioner pursuant to Section 22a-6b(a)(2) of the General Statutes, as amended, and in accordance with Sections 22a-6b-101 and 22a-6b-102 of the Civil Penalty Regulations.

Section 22a-6b-612(d). Schedule of Maximum Assessments.

(1) Any person subject to an assessment under Section 22a-6b-612(c) may be assessed an amount for each operation without an O&M permit no larger than the sum of:

Comments on Regulations

Comment to Section 612(a)

612 covers operating without an O&M permit. The violation arises by operating prior to obtaining an O&M permit or by continuing to operate after suspension or revocation of an O&M permit.

Comment to Section 612(d)

The 612 schedule of maxima is identical to the sum of the 611 and 613 schedules. This requires explanation, for the theories which underlie the use of the 611 schedule here differ from their justification in 611. 611 imposes assessments for improper O&M. Improper O&M generates savings, and the assessment is tied to all the savings from completely improper O&M - i.e., from non-operation of control equipment. In contrast, 612 liability arises from operating without an O&M permit. Two theories justify assessment:

(A) the product of (i) the maximum monthly amount the Commissioner may assess under the schedule of maximum assessments in Section 22a-6b-611(d) for the combination of equipment costs and operating costs which would be incurred to ensure continued compliance with emissions and operation and maintenance standards and (ii) the number of months or fractions thereof the Commissioner determines are in the assessment period; and

(B) the product of (i) the maximum monthly amount the Commissioner may assess under Schedule B of maximum assessments in Section 22a-6b-613(d) for the combination of monitoring equipment costs and monitoring operating costs which would be incurred in complying with monitoring standards and (ii) the number of months or fractions thereof in the assessment period.

(2) The maximum amounts set forth in these schedules represent the economic advantages a person who operates without an operation and maintenance permit could gain from one month's noncompliance with operation and maintenance standards and monitoring standards in such permit, assuming operating, economic and tax conditions all

(1) a regulatee is supposed to discontinue source operations without an O&M permit. By operating, he saves the costs of shutting down. Rather than assessing the regulatee the value of delaying shutdown (a large assessment, since shutdowns are expensive), the Department is, in effect, mitigating this liability in the regulations by limiting it to the value of not operating control equipment and not monitoring;

(2) a regulatee which operates without an O&M permit saves the costs of complying with permit conditions, which may include parametric standards and monitoring requirements. Thus, the assessment is based on savings from avoiding such compliance, viz., savings from improper O&M and savings from failure to monitor.

Of these, theory (2) is the stronger.

tending to increase the value to the regulatee of such operation.

(3) The Commissioner shall impose lesser assessments pursuant to Section 22a-6b-612(e)(1) if he finds the cost of compliance is less than indicated in these schedules, and he may further lower the assessment pursuant to Sections 22a-6b-612(e)(3) and/or 22a-6b-612(g).

(4) In no case shall the assessment exceed, for each operation without an operation and maintenance permit, $25,000 plus $1000 for each day that such operation continues after the regulatee has received a civil penalties final order.

(5) The Commissioner has determined that the maximum remedies provided in these schedules will ensure immediate and continued compliance and will protect (i) the public health, safety, and welfare; (ii) the public trust in the air, water, land, and other natural resources of the state; and (iii) the reasonable use of property.

Text of Regulation

Comments on Regulations

Section 22a-6b-612(e). Determination of Amount in Individual Cases.

(1) The Commissioner shall determine the amount of the monthly civil assessment he may levy for each individual operation with an operation and maintenance permit based on the total required cost of compliance, without regard to expenditures for partial compliance. Individual assessments are calculated in four broad steps: the gross cash flow of the required compliance expenditures, chiefly equipment costs, operating costs, monitoring equipment costs and monitoring operating costs, is determined; the net cash flow is established by taking tax and other savings into account; this net cash flow is discounted to present value; and the individual monthly assessment is calculated as that amount which would, if paid monthly, amortize the net present value of continued compliance.

(2) The Appendix to Section 22a-6b-611 explains these calculations. The Commissioner shall provide a written summary of the calculations used to determine a particular assessment, except to the extent he is required to maintain the confidentiality of certain information pursuant to Section 22a-6b-612(g), upon written request by an interested party or the affected regulatee.

(3) In setting a civil assessment in a particular case, the Commissioner shall consider all

Text of Regulation | **Comments on Regulations**

factors which he deems relevant, including but not limited to those listed below; and he may, as a result of considering and balancing these factors, lower the civil assessment. The factors he shall consider include:

(A) The amount of the assessment necessary to ensure immediate and continued compliance;

(B) The character and degree of impact that non-compliance has on the public trust in the air, water, and land and on the natural resources of the state, especially any rare or unique natural phenomena;

(C) The character and degree of injury to, or interference with, public health, safety or welfare which is caused or threatened to be caused by non-compliance;

(D) The conduct of the person incurring the civil assessment in taking all feasible steps or procedures necessary or appropriate to comply or to correct non-compliance;

(E) Any prior violations by such person of statutes, regulations, orders or permits administered, adopted or issued by the Commissioner;

Text of Regulation	Comments on Regulations
(F) The economic and financial conditions of such person;	
(G) The character and degree of injury to, or interference with reasonable use of property which is caused or threatened to be caused by such non-compliance.	
(4) The Commissioner shall calculate the total assessment by mutiplying the monthly assessment by the number of months or fractions thereof in the assessment period.	
(5) In no case shall an individual assessment for each operation without an operation and maintenance permit exceed either (A) the maximum amount Section 22a-6b-612(d)(1) would allow per month for an operation with the same equipment costs, operating costs, monitoring equipment costs, and monitoring operating costs, or (B) for the total assessment due during the entire assessment period, $25,000 plus $1000 for each day that such operation continues after the regulatee has received a civil penalties final order.	
Section 22a-6b-612(f). Enforcement Proceedings.	
(1) Hearings.	

Text of Regulation	Comments on Regulations
(A) Any person in receipt of a notice issued pursuant to Section 22a-6b-101(a) of the Civil Penalty Regulations may apply to the Commissioner for a hearing pursuant to Section 22a-6b-101(b).	
(B) Such hearing shall be conducted by the Commissioner, a Deputy Commissioner, or a hearing officer duly appointed by the Commissioner or a Deputy Commissioner. Such hearing be conducted pursuant to Sections 4-177 to 4-184 of the General Statutes, as amended, and to the Rules of Practice of the Department.	
(C) The Department shall have the burden of producing evidence to prove the basis for imposing the assessment and the reasonableness of the proposed assessment, and the risk of non-persuasion by a preponderance of the evidence shall fall upon the Department.	
(D) If the Commissioner, Deputy Commissioner, or hearing officer presiding at the hearing determines that information important to an accurate determination of all or part of the civil assessment amount is not available at the time of the hearing but will become available later, he may defer determining the	

amount of the civil assessment due until he establishes that the previously missing information is available, at which time he shall promptly hold a hearing regarding the amount of the assessment due. He may not collect any portion of the civil assessment until this hearing is held and a civil penalties final order issued.

(2) Appeals. Any person may appeal a civil penalties final order of the Commissioner issued after a hearing, pursuant to Section 22a-6b(f) of the General Statutes, as amended.

Section 22a-6b-612(g). Mitigation.

(1) General. The Commissioner may mitigate any assessment upon such terms as he in his discretion deems proper or necessary upon consideration of the factors set forth in Section 22a-6b(b) of the General Statutes, as amended.

(2) Mitigation for Partial Compliance. If the Commissioner finds that the regulatee has taken action and incurred expenses specifically to comply with operation and maintenance standards and/or monitoring standards throughout the assessment period or during any parts thereof, he may mitigate the assessment to reflect such expenses.

(3) Correction of Assessments.

(A) A regulatee in receipt of a civil penalties final order issued pursuant to Section 22a-6b-101(a) of the Civil Penalty Regulations may petition the Commissioner for correction of the assessment against him at any time between the date of the civil penalties final order and six months after the Commissioner finds that the regulatee has come into compliance. Such petition shall set forth in writing any evidence that the total required cost of compliance, and/or the assessment period has been or will be less than the Commissioner had initially determined in calculating the assessment, and it shall be sent by certified mail or personal service to the Commissioner or the Director of Air Compliance.

(B) The Commissioner may, in response to such a petition or at his own initiative, lower an assessment to the extent he determines that the total required cost of compliance on which the monthly assessment was based, and/or the assessment period used to calculate the total assessment was excessive. If the Commissioner takes no action in response to such a petition, or if his response is not satisfactory to the regulatee, the regulatee may obtain a hearing of right once it has come into compliance or at any other time specified in a final order or a civil penalties final order. Follow-

Text of Regulation	Comments on Regulations
ing such a hearing the Commissioner shall mitigate the civil penalty if and to the extent that the actual total required cost of compliance has been less than he initially determined, and/or that the regulatee has come into compliance with less delay than the total delay for which assessments have previously been made.	
(C) Refunds shall be made with interest calculated from the time of payment and at the cost of capital rate used to determine the penalty.	
(4) Reduction of the Assessment Period for Delays Beyond the Regulatee's Control. The Commissioner shall exclude from the assessment period such periods of non-compliance as the regulatee proves have been caused by strikes or lockouts; riots, wars, or other acts of violence; floods, hurricanes, or other Acts of God; or other equally severe, unforeseeable and uncorrectible accidents; where such acts or events were occasioned directly upon the regulatee or a person under contract to the regulatee. In addition, the Commissioner shall exclude from the assessment period such periods of non-compliance as were occasioned by delays attributable to the Air Compliance Unit of the Department in excess of reasonable processing times. Nothing in this section shall prohibit a regulatee from proposing, or the Department from accepting, a compliance timetable which excludes from the assessment period periods of non-compliance caused by other acts or events beyond the control of the regulatee, such as contractors' or suppliers' delays.	

Text of Regulation

Comments on Regulations

(5) Notice.

(A) The Commissioner shall report every case in which he lowers an assessment pursuant to Section 22a-6b-612(e)(3) or in which he mitigates an assessment pursuant to Section 22a-6b-612(g)(1-4), if the monthly assessment without such lowering or mitigation would be greater than three hundred dollars. This report shall state the name and address of the regulatee, the amount of the reduction, the amount of the remaining assessment, and the grounds for such lowering or mitigation.

(B) The Commissioner shall also send written notice of any hearings to be held regarding cases where the amount of the assessment may be an issue, at least ten days prior to the hearings, to all persons who have within the preceding twelve months requested copies of such reports.

Section 22a-6b-612(h). Request for Information by the Commissioner.

(1) The Commissioner may require the regulatee to provide such additional information, including information regarding costs, as he deems necessary to effectuate the purposes of Section 22a-6b-612.

Text of Regulation	Comments on Regulations
(2) Any person who files any statement, record or report with the Commissioner containing false or misleading information or other claims will be liable to criminal prosecution for a Class A misdemeanor punishable by imprisonment for a period up to one year and a fine of up to one thousand dollars ($1000) for each violation pursuant to Section 53a-157 of the General Statutes.	
(3) Any information disclosing trade secrets and commercial or financial information provided by a regulatee pursuant to this section will remain confidential if the regulatee so requests in a letter sent by certified mail or personal service to the Commissioner or the Director of Air Compliance, except that such information may be disclosed to other officers, employees, or authorized representatives of the state or federal government concerned with carrying out these regulations or when relevant in any hearing conducted under the authority of these regulations by the Department of Environmental Protection, subject to such safeguards as the hearing officer may impose, and such information shall be disclosed when required by applicable state or federal statute.	
Section 22a-6b-612(1). Collection.	
(1) Payment of the civil penalties assessed under this section may be required monthly, or at such time or time intervals as the Commissioner	

Text of Regulation	Comments on Regulations
determines will most effectively limit the Department's administrative costs and further the objectives defined in Section 22a-6b-612(d).	
(2) The present value of the total civil penalty assessed, calculated at the time the notice of violation is issued, shall be held constant regardless of the timing of its collection.	

CIVIL ASSESSMENT REGULATIONS:

FAILURE TO MONITOR

SECTION 22a-6b-613

Civil Assessment Regulations for Failure to Monitor

Section 22a-6b-613(a). Title. This section shall be known and may be cited as "Civil Penalty Regulations: Failure to Monitor."

Section 22a-6b-613(b). Definitions. The definitions in Section 22a-6b-611(b) shall apply to this section.

Section 22a-6b-613(c). Civil Assessments for Failure to Monitor. Any person who fails to monitor shall be liable for a civil assessment by the Commissioner pursuant to Section 22a-6b(a)(2) of the General Statutes, as amended, and in accordance with the procedures prescribed in Section 22a-6b-100 to 22a-6b-102, inclusive, of the Civil Penalty Regulations.

Section 22a-6b-613(d). Schedule of Maximum Assessments.

(1) Any person subject to an assessment under Section 22a-6b-613(c) may be assessed an amount for each failure to monitor no larger than the product of (A) the monthly amount listed in the following

Comment to Section 613(a)

This regulation applies to non-compliance with monitoring standards in Section 19-508-4 of the Abatement regulations, Section 19-508-103 of the O&M regulations, or in a final order or final O&M permit.

Comment to Section 613(d)

A regulatee who fails to monitor has a strong incentive also to operate improperly or shut down his control equipment, since the Department's detection system is severely hampered by the absence of reliable monitoring data. Thus, the assessment for failure to monitor is based on the costs of O&M unless and to the extent the regulatee proves he properly operated and maintained his control equipment during the period of monitoring failure.

Text of Regulation	Comments on Regulations
Schedule A for the combination of equipment costs and operating costs which would be incurred to ensure continued compliance with emissions and operation and maintenance standards, and (B) the number of months or fractions thereof the Commissioner determines are in the assessment period. (2) If the Commissioner finds that a person subject to assessment under Section 22a-6b-613(c) has taken such action and incurred all the expenses necessary to ensure continued compliance throughout the assessment period with emissions and operation and maintenance standards, he shall determine the maximum monthly assessment from the following Schedule B, instead of Schedule A, for the combination of monitoring equipment costs and monitoring operating costs which would be incurred to ensure immediate and continued compliance with monitoring standards. (3) The maximum monthly amounts in Schedule A represent the economic advantages a person responsible for a failure to monitor could gain from one month's noncompliance with operation and maintenance standards during the monitoring failure, assuming operating, economic and tax conditions all tending to increase the value to the person of such noncompliance. The maximum monthly amounts in Schedule B represent the economic advantages a person responsible for a failure to monitor could gain from one month's noncompliance with monitoring standards, assuming the person had during the month incurred all the expenses necessary for continued compliance with emissions and operation and maintenance standards, and assuming economic and tax conditions all tending to increase the value to the person of such noncompliance. For both schedules,	

these maximum amounts have been calculated in three broad steps: a gross cash flow for each set of compliance expenditures, chiefly equipment costs and operating costs or monitoring equipment costs and monitoring operating costs, is defined; this gross cash flow is discounted to present value; and the maximum monthly assessment is calculated as that amount which would, if paid monthly, amortize the gross present value of continued compliance. The Appendix to Section 22a-6b-611 explains these calculations.

(4) The Commissioner shall impose lesser assessments pursuant to Section 22a-6b-613(e)(1-2) if he finds the cost of compliance of each failure to monitor is less than indicated in the appropriate schedule, and he may further lower these assessments pursuant to Sections 22a-6b-613(e)(5) and/or 22a-6b-613(g).

(5) In no case shall the assessment exceed $25,000 plus $1000 for each day that the failure to monitor continues after the regulatee has received a civil penalties final order.

(6) The Commissioner has determined that the remedies provided by these schedules will ensure immediate and continued compliance and will protect (i) the public health, safety, and welfare; (ii) the public trust in the air, water, land and other natural resources of the state; and (iii), the reasonable use of property. The Commissioner has also determined that the remedies in Schedule A will encourage proper operation and maintenance of

SCHEDULE A: SCHEDULE OF MAXIMUM MONTHLY CIVIL ASSESSMENTS FOR FAILURE TO MONITOR

OPERATING COSTS	EQUIPMENT COSTS													
	$0-2500	$2501-5000	$5001-10,000	$10,001-20,000	$20,001-35,000	$35,001-50,000	$50,000-70,000	$70,001-100,000	$100,001-150,000	$150,001-200,000	$200,001-300,000	$300,001-500,000	$500,001-1,000,000	$1,000,000 and above
$0-1000	334	451	686	1156	1861	2566	3506	4916	7266	9616	14316	23715	47214+	*
$1001-2500	658	776	1010	1480	2185	2890	3830	5240	7590	9940	14640	24040	47539+	*
$2501-5000	1199	1316	1551	2021	2726	3431	4371	5781	8131	10481	15181	24580	48079+	*
$5001-7500	1739	1857	2092	2562	3267	3971	4911	6321	8671	11021	15721	25121	48620+	*
$7501-10,000	2280	2397	2632	3102	3807	4512	5452	6862	9212	11562	16262	25661	49160+	*
$10,001-15,000	3361	3478	3713	4183	4888	5593	6533	7943	10293	12643	17343	26742	50241+	*
$15,001-20,000	4442	4559	4794	5264	5969	6674	7614	9024	11374	13724	18424	27823	51322+	*
$20,001-25,000	5523	5640	5875	6345	7050	7755	8695	10105	12455	14805	19505	28904+	52404+	*
$25,001-35,000	7685	7802	8037	8507	9212	9917	10857	12267	14617	16967	21667	31066+	54566+	*
$35,001-50,000	10928	11045	11280	11750	12455	13160	14100	15510	17860	20210	24910	34310+	*	*
$50,001-75,000	16333	16451	16686	17156	17861	18566	19506	20915	73265	25615	30315+	39715+	*	*
$75,001-100,00	21738	21856	22091	22561	23266	23971	24911	26321	28671+	31021+	35720+	45120+	*	*
$100,001-200,00	43359+	43477+	43712+	44182+	44887+	45592+	46532+	47942+	50291+	52641+	*	*	*	*
$200,000 and above	*	*	*	*	*	*	*	*	*	*	*	*	*	

* No more than $25,000 plus $1000 for each day that the unabated activity continues after the regulatee has received a civil penalties final order.

+ Once the $25,000 element of the maximum is used up, the maximum monthly charge will be $1000 times the number ofdays in the month.

SCHEDULE B: SCHEDULE OF MAXIMUM MONTHLY CIVIL ASSESSMENTS FOR FAILURE TO MONITOR DURING PROPER OPERATION OF CONTROL EQUIPMENT

Operating Costs	Equipment Costs														
	$0-500	$501-1000	$1001-2000	$2001-4000	$4001-6000	$6001-8000	$8001-10,000	$10,001-15,000	$15,001-20,000	$20,001-25,000	$25,001-35,000	$35,001-50,000	$50,001-75,000	$75,001-100,000	$100,001-200,000
$0-500	131.60	155.10	202.10	296.10	390.09	484.09	578.09	813.08	1048.07	1283.06	1753.04	2458.02	3632.98	4807.93	9507.76
$501-1000	239.71	263.21	310.21	404.20	498.20	592.19	686.19	921.18	1156.17	1391.17	1861.15	2566.12	3741.08	4916.04	9615.87
$1001-2000	455.92	479.42	526.41	620.41	714.41	808.40	902.40	1137.39	1372.38	1607.37	2077.36	2782.33	3957.29	5132.25	9832.07
$2001-4000	888.33	911.83	958.83	1052.83	1146.82	1240.82	1334.82	1569.81	1804.80	2039.79	2509.78	3214.75	4389.70	5564.66	10264.49
$4001-6000	1320.75	1344.25	1391.25	1485.24	1579.24	1673.24	1767.23	2002.23	2237.22	2472.21	2942.19	3647.17	4822.12	5997.08	10696.91
$6001-8000	1753.17	1776.67	1823.67	1917.66	2011.66	2105.66	2199.65	2434.64	2669.64	2904.63	3374.61	4079.58	5254.54	6429.50	11129.33
$8001-10,000	2185.58	2209.08	2256.08	2350.08	2444.08	2538.07	2632.07	2867.06	3102.05	3337.04	3807.03	4512.00	5686.96	6861.91	11561.74
$10,001-15,000	3266.63	3290.13	3337.13	3431.12	3525.12	3619.12	3713.11	3948.10	4183.09	4418.09	4888.07	5593.04	6768.00	7942.96	12642.79
$15,001-20,000	4347.67	4371.17	4418.17	4512.16	4606.16	4700.16	4794.16	5029.14	5264.14	5499.13	5969.11	6674.09	7849.04	9024.00	13723.83
$20,001-25,000	5428.71	5452.21	5499.21	5593.21	5687.20	5781.20	5875.20	6110.19	6345.18	6580.17	7050.16	7755.13	8930.09	10105.04	14804.88
$25,001-35,000	7590.80	7614.30	7661.30	7755.30	7849.29	7943.29	8037.29	8272.28	8507.27	8742.26	9212.24	9917.22	11092.18	12267.13	16966.95
$35,001-50,000	10833.93	10857.43	10904.43	10998.43	11092.42	11186.42	11280.41	11515.41	11750.40	11985.39	12455.38	13160.35	14335.30	15510.26	20210.08
$50,001-75,000	16239.15	16262.65	16309.65	16403.64	16497.64	16591.63	16685.63	16920.61	17155.60	17390.61	17860.58	18565.57	19740.51	20915.47	25615.30
$75,001-100,000	21644.34	21667.84	21714.84	21808.85	21902.85	21996.84	22090.84	22325.82	22560.81	22795.80	23265.80	23970.76	25145.72	26320.68	31020.52
$100,001-200,000	43265.22	43288.72	43335.72	43429.72	43523.73	43617.71	43711.71	43946.70	44181.69	44416.68	44886.67	45591.64	46766.60	47941.55	52641.39
$200,001-750,000	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

*No more than $25,000 plus $1000 per day for every day in non-compliance after receipt of a Final Order.

air pollution control equipment and other abatement strategies during periods of failure to monitor.

Section 22a-6b-613(e). Determination of Amount in Individual Cases.

(1) The Commissioner shall determine the monthly amount he may assess for any individual failure to monitor based on the total required cost of compliance with emissions and operation and maintenance standards, without regard to expenditures for partial compliance, unless the regulatee proves pursuant to paragraph (2) that he has incurred all the expenses necessary to ensure continued compliance with emissions and operation and maintenance standards.

(2) If the regulatee proves that he has incurred all the expenses necessary to ensure continued compliance with emissions and operation and maintenance standards throughout the assessment period or during any parts thereof, the Commissioner shall determine the monthly amount he may assess for such period or periods based on the actual or probable cost of compliance with monitoring standards.

(3) Individual assessments are calculated in four broad steps: the gross cash flow of the required compliance expenditures, chiefly equipment costs and operating costs or monitoring equipment costs and monitoring operating costs, is determined; the net cash flow is established by taking tax and other savings into account; this net cash flow is discounted to present value; and the individual

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monthly assessment is calculated as that amount which would, if paid monthly amortize the net present value of continued compliance.

(4) The Appendix to Section 22a-6b-611 explains these calculations. The Commissioner shall provide a written summary of the calculations used to determine a particular assessment, except to the extent he is required to maintain the confidentiality of certain information pursuant to Section 22a-6b-613(h), upon written request by an interested party or the affected regulatee.

(5) In determining an assessment in a particular case, the Commissioner shall consider all factors which he deems relevant, including, but not limited to those listed below; and he may, as a result of considering and balancing these factors, lower the assessment. The factors he shall consider include:

(A) The amount of the assessment necessary to ensure immediate and continued compliance;

(B) The character and degree of impact the failure to monitor has on the public trust in the air, water, and land and on the natural resources of the state, especially any rare or unique natural phenomena;

(C) The character and degree of injury to, or interference with, public health, safety or welfare which is caused or threatened to be caused by the failure to monitor;

(D) The conduct of the person incurring the assessment in taking all feasible steps or procedures necessary or appropriate to comply or to correct the failure to monitor;

(E) Any prior violations by such person of statutes, regulations, orders or permits administered, adopted or issued by the Commissioner;

(F) The economic and financial conditions of such person;

(G) The character and degree of injury to, or interference with reasonable use of property which is caused or threatened to be caused by such failure to monitor.

(6) The total assessment shall be equal to the monthly assessment multiplied by the number of months or fractions thereof in the assessment period.

(7) In no case shall an individual assessment exceed either (A) the maximum amount Schedule A in

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Section 22a-6b-613(d) would allow per month for a failure to monitor with the same equipment costs and operating costs or (B) for the total assessment due during the entire assessment period, $25,000 plus $1000 for each day that the failure to monitor continues after the regulatee has received a civil penalties final order.

Section 22a-6b-613(f). Enforcement Proceedings.

(1) Hearings.

(A) Any person in receipt of a notice issued pursuant to Section 22a-6b-101(a) of the Civil Penalty Regulations may apply to the Commissioner for a hearing pursuant to Section 22a-6b-101(b).

(B) Such hearing shall be conducted by the Commissioner, a Deputy Commissioner, or a hearing officer duly appointed by the Commissioner or a Deputy Commissioner. Such hearing shall be conducted pursuant to Sections 4-177 to 4-184, inclusive, of the General Statutes, as amended, and to the Rules of Practice of the Department.

(C) The Department shall have the burden of producing evidence to prove the basis for imposing the assessment and the reasonableness of the proposed assessment, and the risk of non-persuasion by a preponderance of the evidence shall fall upon the Department.

(D) If the Commissioner, Deputy Commissioner, or hearing officer presiding at the hearing determines that information important to an accurate determination of all or part of the assessment is not available at the time of the hearing but will become available later, he may defer determining the amount of the assessment due until he establishes that the previously missing information is available, at which time he shall promptly hold a hearing regarding the amount of the assessment due. He may not collect any portion of the assessment until this hearing is held and a civil penalties final order issued.

(3) Appeals. Any person may appeal a civil penalty final order of the Commissioner issued after a hearing, pursuant to Section 22a-6b(f) of the General Statutes, as amended.

Section 22a-6b-613(g). Mitigation. (1) General. The Commissioner may mitigate any assessment upon such terms as he, in his discretion, deems proper or necessary upon consideration of the factors set forth in Section 22a-6b(b) of the General Statutes, as amended.

(2) Mitigation for Partial Compliance. If the Commissioner finds that the regulatee has taken

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action and incurred expenses specifically to comply with emissions and operation and maintenance standards throughout the assessment period or during any parts thereof, he may mitigate the assessment to reflect these expenses.

(3) Correction of Assessments.

(A) A regulatee in receipt of a civil penalty final order may petition the Commissioner for correction of the assessment against him at any time between the date of the civil penalty final order and six months after the Commissioner finds that the regulatee has come into compliance. Such petition shall set forth in writing any evidence that the total required costs of compliance and/or the assessment period has been or will be less than the Commissioner had initially determined in calculating the assessment, and it shall be sent by certified mail or personal service to the Commissioner or the Director of Air Compliance.

(B) The Commissioner may, in response to such a petition or at his own initiative, lower an assessment if he determines that the evidence in the petition establishes that the total required costs of compliance on which the monthly assessment was based and/or the assessment period used to calculate the total assessment was excessive. If the Commissioner takes no action in response to such a petition, or if his response is not satisfactory to the regulatee, the regulatee may obtain a hearing

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of right once he has come into compliance or at any other time specified in a final order or a civil penalties final order. Following such a hearing the Commissioner shall mitigate the civil assessment if and to the extent that the total required cost of compliance has been less than he had initially determined, and/or the regulatee has come into final compliance with less delay than the delay for which assessments have previously been made.

(C) Refunds shall be made with interest calculated from the time of payment and at the cost of capital rate used to determine the assessment.

(3) Reduction of the Assessment Period for Delays Beyond the Regulatee's Control. The Commissioner shall exclude from the assessment period such periods of non-compliance as the regulatee proves have been caused by strikes or lockouts; riots, wars, or other acts of violence; floods, hurricanes, or other Acts of God; or other equally severe, unforeseeable and uncorrectible accidents; where such acts or events were occasioned directly upon the regulatee or a person under contract to the regulatee. In addition, the Commissioner shall exclude from the assessment period such periods of non-compliance as were occasioned by delays attributable to the Air Compliance Unit of the Department in excess of reasonable processing times. Nothing in this section shall prohibit a regulatee from proposing, or the Department from accepting, a compliance timetable which excludes from the assessment period periods of non-compliance caused by other acts or events beyond the control of the regulatee, such as contractors' or suppliers' delays.

(4) Notice.

(A) The Commissioner shall report every case in which he lowers an assessment pursuant to Section 22a-6b-613(e)(5) or in which he mitigates an assessment pursuant to Sections 22a-6b-613(g)(1-4), if the monthly assessment without such lowering or mitigation would be greater than three hundred dollars. This report shall state the name and address of the regulatee, the amount of the reduction, the amount still to be assessed, and the grounds for such lowering or mitigation.

(B) The Commissioner shall also send written notice of any hearings to be held regarding cases where the amount of the assessment may be an issue, at least ten days prior the hearings, to all persons who have within the preceeding twelve months requested copies of such reports.

Section 22a-6b-613(h). Request for Information by the Commissioner.

(1) The Commissioner may require the regulatee to provide such additional information, including information regarding costs, as he deems necessary to effectuate the purposes of Section 22a-6b-613.

(2) Any person who files any statement, record or report with the Commissioner containing false or

misleading information or other claims will be liable to criminal prosecution for a Class A misdemeanor punishable by imprisonment for a period of up to one year and a fine of up to one thousand dollars ($1000) for each violation pursuant to Section 53a-157 of the Connecticut General Statutes.

(3) Any information disclosing trade secrets and commercial or financial information provided by a regulatee pursuant to this section will remain confidential if the regulatee so requests in a letter sent by certified mail or personal service to the Commissioner or the Director of Air Compliance, except that such information may be disclosed to other officers, employees, or authorized representatives of the state or federal government concerned with carrying out these regulations or when relevant in any hearing conducted under the authority of these regulations by the Department of Environmental Protection, subject to such safeguards as the hearing officer may impose, and such information shall be disclosed when required by applicable state or federal statute.

Section 22a-6b-613(i). Collection.

(1) Payment of the assessments made under this section may be required monthly, or at such time or time intervals as the Commissioner determines will most effectively limit the Department's administrative costs and further the objectives defined in Section 22a-6b-613(d).

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(2) The present value of the total assessment, calculated at the time the notice of violation is issued, shall be held constant regardless of the timing of its collection.	

CIVIL ASSESSMENT REGULATIONS:
VIOLATION OF MONITORING TIMETABLES
SECTION 22a-6b-614

Civil Assessment Regulations for Violation of Monitoring Timetables

Section 22a-6b-614(a). Title. This section shall be known and may be cited as "Civil Penalty Regulations: Violation of Monitoring Timetables."

Section 22a-6b-614(b). Definitions. The definitions in Section 22a-6b-611(b) shall apply to this section.

Section 22a-6b-614(c). Civil Assessment for Noncompliance with a Monitoring Compliance Timetable. Any person subject to a final order or a final operation and maintenance permit of the Commissioner containing a monitoring compliance timetable who fails to monitor and who is not in compliance with the terms of the timetable shall be liable to a civil assessment by the Commissioner pursuant to Section 22a-6b(a)(3) of the General Statutes, as amended, and in accordance with the procedures prescribed in Section 22a-6b-101 to 22a-6b-102 of the Civil Penalty Regulations, inclusive.

Section 22a-6b-614(d). Schedule of Maximum Assessments. (1) Any person subject to an assessment under Section 22a-6b-614(c) may be assessed an amount for each failure to monitor that is under a monitoring compliance timetable but not in compliance with the terms of the timetable no larger than the product of (A) the monthly amount the Commissioner may assess under Schedule A of maximum assessments in Section 22a-6b-613(d) against a person for a failure to monitor with the same equipment costs and operating costs, and (B) the number of months and/or fractions thereof the Commissioner determines are in the assessment period.

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(2) If the Commissioner finds that a person subject to assessment under Section 22a-6b-614)c) has taken such action and incurred all the expenses necessary to ensure continued compliance throughout the assessment period with emissions and operation and maintenance standards, he shall determine the maximum monthly assessment from Schedule B, instead of Schedule A, in Section 22a-6b-613(d) for the combination of monitoring equipment costs and monitoring operating costs which would be incurred to ensure immediate and continued compliance with monitoring standards.

(3) The maximum monthly amounts in Schedule A represent the economic advantages a person responsible for a failure to monitor could gain from one month's noncompliance with operation and maintenance standards during the monitoring failure, assuming operating, economic and tax conditions all tending to increase the value to the person of such noncompliance. The maximum monthly amounts in Schedule B represent the economic advantages a person responsible for a failure to monitor could gain from one month's noncompliance with monitoring standards, assuming the person had during the month incurred all the expenses necessary for continued compliance with operation and maintenance standards, and assuming economic and tax conditions all tending to increase the value to the person of such noncompliance. For both schedules, these maximum amounts have been calculated in three broad steps: a gross cash flow for each set of compliance expenditures, chiefly equipment costs and operating costs or monitoring equipment costs and monitoring operating costs, is defined; this gross cash flow is discounted to present value; and the maximum monthly assessment is calculated as that amount which would, if paid monthly, amortize the gross present value of continued compliance. The Appendix to Section 22a-6b-611 explains these calculations.

(4) The Commissioner shall impose lesser assessments pursuant to Section 22a-6b-614(e)(1-2) if he finds the cost of compliance of each failure to monitor are smaller than indicated in the appropriate schedule, and he may further lower these assessments pursuant to Sections 22a-6b-614(e)(5) and/or 22a-6b-614(g).

(5) In no case shall the assessment exceed $25,000 plus $1000 for each day that the failure to monitor continues after the regulatee has received a civil penalties final order.

Section 22a-6b-614(e). Determination of Amount in Individual Cases.

(1) The Commissioner shall determine the monthly amount he may assess for each individual case of a failure to monitor not conforming to or complying with a monitoring compliance timetable based on the total required cost of compliance with emissions and operation and maintenance standards, without regard to expenditures for partial compliance, unless the regulatee proves pursuant to paragraph (2) that he has incurred all the expenses necessary to ensure continued compliance with emissions and operation and maintenance standards.

(2) If the regulatee proves that he has incurred all the expenses necessary to ensure continued compliance with emissions and operation and maintenance standards throughout the assessment period or during any parts thereof, the Commissioner shall

determine the monthly amount he may assess for such period or periods based on the actual or probable cost of compliance with monitoring standards.

(3) Individual assessments are calculated in four broad steps: the gross cash flow of the required compliance expenditures, chiefly equipment costs and operating costs or monitoring equipment costs and monitoring operating costs, is determined; the net cash flow is established by taking tax and other savings into account; this net cash flow is discounted to present value; and the individual monthly assessment is calculated as that amount which would, if paid monthly, amortize the net present value of continued compliance.

(4) The Appendix to Section 22a-6b-611 explains these calculations. The Commissioner shall provide a written summary of the calculations used to determine a particular assessment, except to the extent he is required to maitain the confidentiality of certain information pursuant to Section 22a-6b-614(h), upon written request by an interested party or the affected regulatee.

(5) In determining an assessment in a particular case, the Commissioner shall consider all factors which he deems relevant, including but not limited to those listed below; and he may, as a result of considering and balancing these factors, lower the assessment. The factors he shall consider include:

(A) The amount of the assessment necessary to ensure immediate and continued compliance;

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(B) The character and degree of impact the failure to monitor has on the public trust in the air, water, and land and on the natural resources of the state, especially any rare or unique natural phenomena;	
(C) The character and degree of injury to, or interference with, public health, safety or welfare which is caused or threatened to be caused by the failure to monitor;	
(D) The conduct of the person incurring the assessment in taking all feasible steps or procedures necessary or appropriate to comply or to correct the failure to monitor;	
(E) Any prior violations by such person of statutes, regulations, orders or permits administered, adopted or issued by the Commissioner;	
(F) The economic and financial conditions of such person;	
(G) The character and degree of injury to, or interference with reasonable use of property which is caused or threatened to be caused by such failure to monitor.	

(6) The total assessment shall be equal to the monthly assessment multiplied by the number of months or fractions thereof in the assessment period.

(7) In no case shall an individual assessment exceed either (A) the maximum amount Schedule A in Section 22a-6b-613(d) would allow per month for a failure to monitor with the same equipment costs and operating costs, or (B) for the total assessment due during the entire assessment period, $25,000 plus $1000 for each day that the failure to monitor continues after the regulatee has received a civil penalties final order.

Section 22a-6b-614(f). Enforcement Proceedings.

(1) Hearings.

(A) Any person in receipt of a notice issued pursuant to Section 22a-6b-101(a) of the Civil Penalty Regulations may apply to the Commissioner for a hearing pursuant to Section 22a-6b-101(b).

(B) Such hearing shall be conducted by the Commissioner, a Deputy Commissioner, or a hearing officer duly appointed by the Commissioner or a Deputy Commissioner. Such hearing shall be conducted pursuant to Sections 4-177 to 4-184 of the General Statutes, as amended, and to the Rules of Practice of the Department.

(C) The Department shall have the burden of producing evidence to prove the basis for imposing the assessment and the reasonableness of the proposed assessment, and the risk of non-persuasion by a preponderance of the evidence shall fall upon the Department.

(D) If the Commissioner, Deputy Commissioner, or hearing officer presiding at the hearing determines that information important to an accurate determination of all or part of the assessment is not available at the time of the hearing but will become available later, he may defer determining the amount of the assessment due until he establishes that the previously missing information is available, at which time he shall promptly hold a hearing regarding the amount of the assessment due. He may not collect any portion of the assessment until this hearing is held and a civil penalties final order issued.

(2) Appeals. Any person may appeal a civil penalties final order of the Commissioner issued after a hearing pursuant, to Section 22a-6b(f) of the General Statutes, as amended.

Section 22a-6b-614(g). Mitigation.

(1) General. The Commissioner may mitigate any assessment upon such terms as he in his discretion deems proper or necessary upon consideration of the factors set forth in Sections 22a-6b(b) of the General Statutes, as amended.

(2) Mitigation for Partial Compliance. If the Commissioner finds that the regulatee has taken action and incurred expenses specifically to comply with emissions and operation and maintenance standards throughout the assessment period or during any parts thereof, he may mitigate the assessment to reflect such expenses.

(3) Correction of Assessments.

(A) A regulatee in receipt of a civil penalty final order may petition the Commissioner for correction of the assessment against him at any time between the date of the civil penalty final order and six months after the Commissioner finds that the regulatee has come into compliance. Such petition shall set forth in writing any evidence that the total required cost of compliance and/or the assessment period has been or will be less than the Commissioner had initially determined in calculating the assessment, and it shall be sent by certified mail or personal service to the Commissioner or the Director of Air Compliance.

(B) The Commissioner may, in response to such a petition or at his own initiative, lower an assessment to the extent that evidence in the petition establishes that the total required cost of compliance on which the monthly assessment was based and/or the assessment period used to calculate the total assessment was excessive. If the Commissioner takes no action in response to such a petition, or if his response is not satisfactory to the regulatee, the regulatee may obtain a hearing of right once he has come into compliance or at any other time specified in a final order or a civil penalties final order. Following such a hearing the Commissioner shall mitigate the assessment penalty if and to the extent that the total required cost of compliance has been less than he had initially determined and/or the regulatee came into compliance with less delay than the total delay for which assessments have previously been made.

(C) Refunds shall be made with interest calculated from the time of payment and at the cost of capital rate used to determine the assessment.

(4) Reduction of the Assessment Period for Delays Beyond the Regulatee's Control. The Commissioner shall exclude from the assessment period such periods of non-compliance as the regulatee proves have been caused by strikes or lockouts; riots, wars, or other acts of violence; floods, hurricanes, or other Acts of God; or other equally severe, unforeseeable and uncorrectible accidents; where such acts or events were occasioned directly upon the regulatee or a person under contract to the regulatee. In addition, the Commissioner shall

exclude from the assessment period such periods of non-compliance as were occasioned by delays attributable to the Air Compliance Unit of the Department in excess of reasonable processing times. Nothing in this section shall prohibit a regulatee from proposing, or the Department from accepting, a compliance timetable which excludes from the assessment period periods of non-compliance caused by other acts or events beyond the control of the regulatee, such as contractors' or suppliers' delays.

(5) Notice.

(A) The Commissioner shall report every case in which he lowers an assessment pursuant to Section 22a-6b-614(e)(5) or in which he mitigates an assessment pursuant to Section 22a-6b-614(g)(1-4), if the monthly assessment without such lowering or mitigation would be greater than three hundred dollars. This report shall state the name and address of the regulatee, the amount of the reduction, the amount still to be assessed, and the grounds for such lowering or mitigation.

(B) The Commissioner shall also send written notice of any hearings to be held regarding cases where the amount of the assessment may be an issue, at least ten days prior to the hearings, to all persons who have within the preceeding twelve months requested copies of such reports.

Text of Regulation

Comments on Regulations

Section 22a-6b-614(h). Request for Information by the Commissioner.

(1) The Commissioner may require the regulatee to provide such additional information, including information regarding costs, as he deems necessary to effectuate the purposes of Section 22a-6b-614.

(2) Any person who files any statement, record or report with the Commissioner containing false or misleading information or other claims will be liable to criminal prosecution for a Class A misdemeaner punishable by imprisonment for a period up to one year and a fine of up to one thousand dollars ($1000) for each violation pursuant to Section 53a-157 of the General Statutes.

(3) Any information disclosing trade secrets and commercial or financial information provided by a regulatee pursuant to this section will remain confidential if the regulatee so requests in a letter sent by certified mail or personal service to the Commissioner or the Director of Air Compliance, except that such information may be disclosed to other officers, employees, or authorized representatives of the state or federal government concerned with carrying out these regulations or when relevant in any hearing conducted under the authority of

these regulations by the Department of Environmental Protection, subject to such safeguards as the hearing officer may impose, and such information shall be disclosed when required by applicable state or federal statute.

Section 22a-6b-614(i). Collection.

(1) Payment of the assessments made under this section may be required monthly, or at such time or time intervals as the Commissioner determines will most effectively limit the Department's administrative costs and further the objectives defined in Section 22a-6b-613(d).

(2) The present value of the total assessment, calculated at the time the notice of violation is issued, shall be held constant regardless of the timing of its collection.